SANTA CLARA VALLEY WATER DISTRICT

WATERWAYS MANAGEMENT MODEL

A COMPUTER MODEL FOR MANAGING FACILITIES
AND STREAMS IN SANTA CLARA COUNTY
FOR FLOOD DAMAGE REDUCTION

A USERS MANUAL

1.5.079-1

PROPERTY OF SANTA CLARA VALLEY
WATER DISTRICT
5750 Almaden Expressway
San Jose, California 95118

SANTA CLARA VALLEY WATER DISTRICT

WATERWAYS MANAGEMENT MODEL

USERS MANUAL

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INTRODUCTION

The purpose of this user's manual is to provide an overview of the structure of the Waterways Management Model (WWMM), to describe input requirements and output available from each of the programs, to describe the data files, and to explain system maintenance procedures.

The Waterways Management Model is a system of computer programs which analyzes watershed, channel and floodplain information. This system of programs performs the following analyses necessary for flood control planning and waterways management:

1. Computes flood damages, flood insurance costs, floodproofing costs and floodplain acquisition costs for the one percent event, and estimates benefits of an improved reach (IP01S1).

2. Computes erosion potential, estimates sediment production and summarizes channel geometry (IP02S1).

3. Computes frequency of flooding, average annual damages, and travel time (IP03S1).

4. Computes change in channel capacity with increase in roughness coefficient and sediment depth, estimates economic benefit of intensive maintenance (reduction in average annual damages when minimum roughness and sediment deposition are maintained), computes remaining freeboard for varying roughness and sediment and ranks reaches for maintenance (IP04S1).

5. Screens flood damage reduction measures and funding programs applicable to each channel reach (IP05S1).

6. Prioritizes flood control projects in each flood control zone according to advisory committee criteria (IP06S1).

7. Maintains a comprehensive data file of basic information on watershed, floodplain and channel characteristics (IP07S1).

8. Incorporates data developed from hydraulic analyses using HEC-II into the master data file for use by other WWMM programs (IP08S1).

9. Summarizes environmental quality characteristics for each reach of stream (IP09S1).

10. Incorporates the County Assessor's Master File into the data base for easy updating of property values in the floodplain (IP10S1).

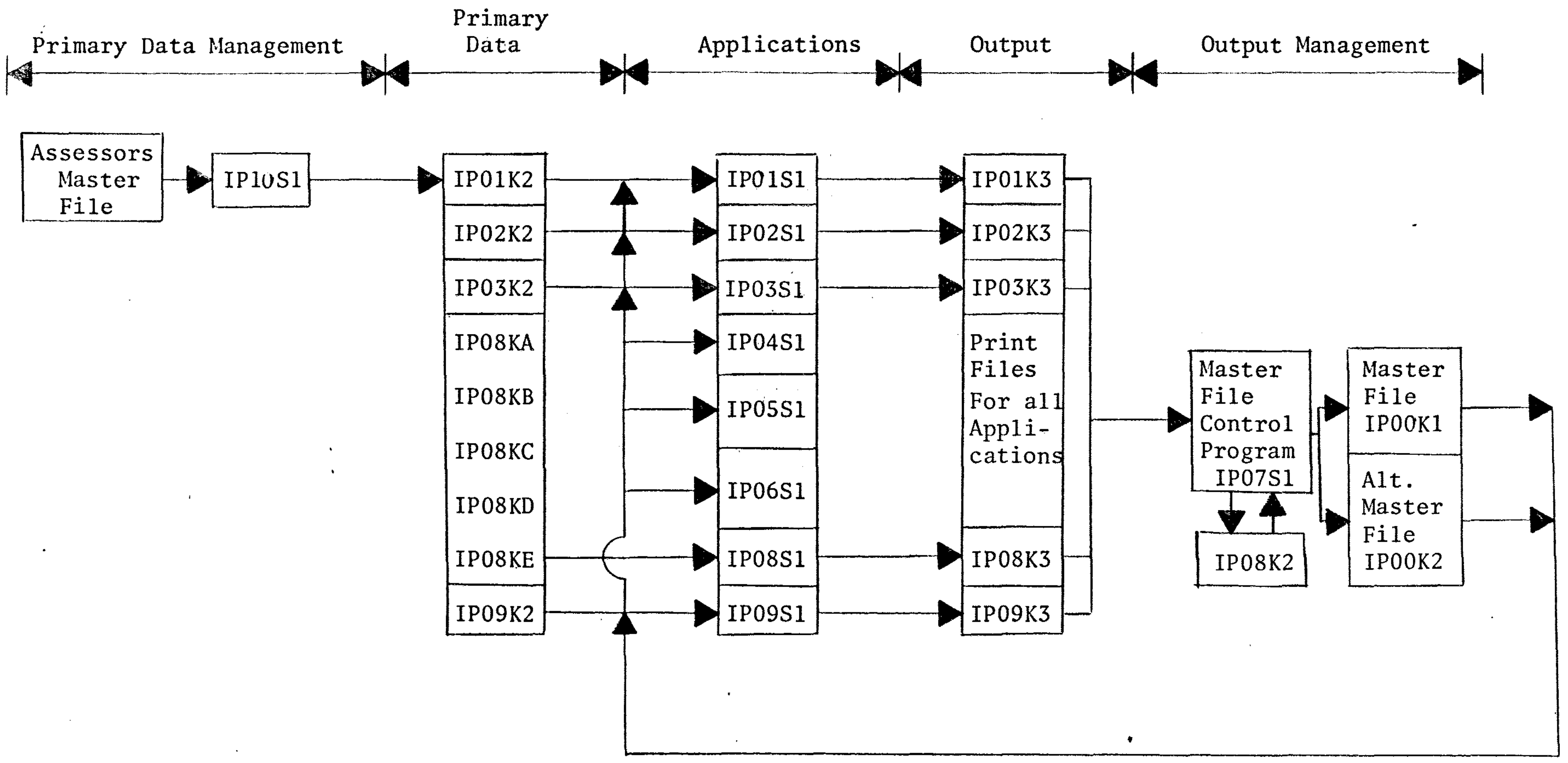
STRUCTURE

The ten WWMM programs (IP01S1 through IP10S1) perform the ten functions listed above. The organization of the programs and data files are shown on Figure 1. Primary data, such as channel geometries and types, are stored in files which have names ending with K2. Output data, such as 1% flood damages and average annual damages, are stored in intermediate output files which have names ending with K3. These output files are then merged and organized into a master file (IP00K1), which allows easy access of one WWMM program to output of all the other WWMM programs. For example, the Maintenance Program (IP04S1) must access information about channel geometry and sediment (IP02S1), existing 1% and design flow rates and average annual damages (IP03S1), and environmental conditions (IP09S1). This information is consolidated into the master file for easy access.

It is important to understand the flow of information through the model to be sure that the program being executed is using the data necessary. All the programs use the master file as input as well as appropriate primary data files. Therefore, the master file must contain current, accurate output information, which means that the Master File Control Program must be executed after any changes to a primary data file. For example, say that area flooded from a creek has increased. This means new 1% flood damages must be computed. Since the average annual damage is computed using 1% damages as input, this value must be updated as well. The appropriate steps would be: (1) run the flood damage program (IP01S1) updating the output file (IP01K3); (2) run the Master File Control Program (IP07S1) to put the new 1% flood damage in the master file; (3) run the average annual damage program (IP03S1) updating the output file (IP03K3); and (4) run the Master File Control Program again to put the new average annual damage in the master file. Since output from one program serves as input to other programs, it is very important that the master file is updated before other programs are executed which will use that output. The success of the model depends on all users understanding this fact. For more detailed instructions, reference the maintenance chapter.

Figure 1

Waterways Management Model Flow Chart



PROGRAMS

This section describes the user input necessary to execute each program and what output is available from each program. An execution card deck consists of several control cards and appropriate data cards for the program being executed.

Control Cards

Control cards control the execution of a program. Control cards must have an invalid character in the first column of the card. This may be accomplished by holding down the MULTIPUNCH key on the card punch machine while typing 1, 2, 3; all three digits are thus typed in Column 1 creating an invalid character. Control cards include the following:

Execution Card

This card tells the computer what program is being executed. It consists of an invalid character in Column 1, followed by: EXECUTE (program name) CHARGE = (charge number). The program name will be IP01E1, IP02E1, etc. The charge number is a six digit number assigned to the project being worked on.

Time Card

This card tells the computer how long execution of the program is expected to take. It consists of an invalid character in Column 1 followed by: TIME = (upper limit of execution time in seconds). The upper limit may be 400 seconds, for example. This prevents the program from running for a long time if it gets caught in a loop through some error.

Data Card

This card tells the computer that the cards following are input data to the program being executed. It consists of an invalid character in Column 1, following by: DATA (card input name). The card input name will be, for example, IP01R5 when IP01E1 is being executed, or IP02R5 when IP02E1 is being executed.

End Card

This card tells the computer that the execution deck is at an end. It consists of an invalid charcter in Column 1 followed by: END.

IP01S1 - FLOOD DAMAGES

This program has seven job options:

(1) 1% flood damages

(2) flood insurance costs

(3) floodproofing and floodplain acquisition costs

(4) summary (damages, insurance, floodproofing and acquisition)

(5) 1% flood damages with respect to flood depths

(6) 1% flood and auto damages

(7) benefits of improving the reach

The execution deck is set up as follows:

CARD 1	Execution Card
CARD 2	Time Card
CARD 3	Data Card
CARD 4	Title Card

Column	Variable	Format	Description
1-72	TITLE	12A6	e.g. Waterways Planning Study, East Zone Economic Analysis (Center column 37)

CARD 5 Job Card

Column	Variable	Format	Description
1-8	IREI	F8.1	Real Estate Index. This varible is used to update property values during the year between Assessor's roles. Enter the most current median home price for San Jose area, in thousands of dollars (e.g.

			117.6). This figure is published regularly by the San Jose Real Estate Board. Variations of residential property values are assumed to indicate general real estate value trends.
16	IPRT	I1	Enter 1 for flood damage option. Enter 2 for flood insurance option. Enter 3 for floodproofing/acquisition option (not yet written). Enter 4 for summary option. Enter 5 for damages per depth. Enter 6 for flood and auto damages. Enter 7 for benefits.
24	ICRIT	I1	Enter 0 if no critical facilities are to be listed in printout. Enter 1 if critical facilities are to be listed in printout.
32	INS	I1	Enter 0 if structures subject to flooding of less than 1 foot are to be included in required structure insurance computation. Enter 1 if structures subject to flooding of less than 1 foot are not to be included in required structure insurance computation.
36	MASTYP	I1	Enter 0 if the permanent file will be used. Enter 1 if the alternative file will be used.

40	IMASTR	I1	Enter 0 if only printed output is needed. Enter 1 if intermediate output file (IP01K3) is to be written in order to update master file. If this option is used, no creek cards should follow this job card. Creeks will be read from input file (IP01K2). Enter 2 if intermediate output file (IP01K3) is to be written for specific creeks. For this option, creek cards must be used.
47-48	IDEBUG	I2	Enter 0 if no debugging output is to be written during execution. Enter a digit from 1 to 10 to have debugging statements written during execution. Level 1 will trace entrance and exit from subroutines; Level 10 will give maximum debugging aid.
65-72	INST	F8.0	Enter 0 for default interest rate 0.10 (10%). Enter interest rate in decimal form for Present Worth calculation.

CARD 6, 7, etc. Creek Cards

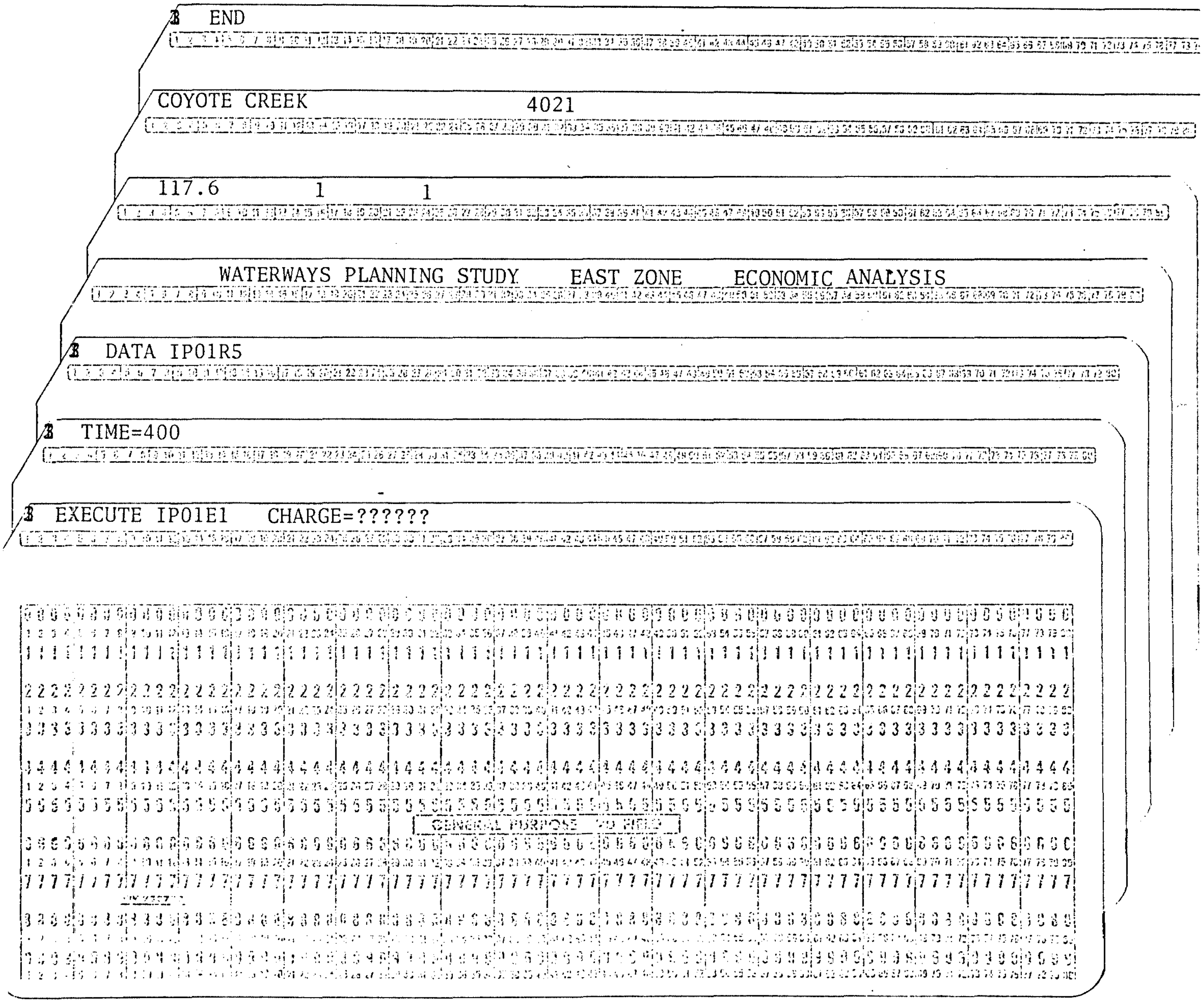
Column	Variable	Format	Description
1-24	CREEK	4A6	Name of creek
29-32	NCRKM	I4	Number of creek (reference Table 3)

33-40	DSSTA	F8.2	Downstream station of reach for which information is desired. Stations are from FIA studies and WPS base maps. Stations such as 100+25.50 are entered as 100.25.
41-48	USSTA	F8.2	Upstream station of reach for which information is desired. If this variable is zero, the program will automatically assume that information for the entire creek is being requested.

LAST CARD End Card

EXAMPLE 1A

1% FLood Damages with Critical Facilities
(Job Option 1)



```
$ END
COYOTE CREEK                4021
117.6         1       1
         WATERWAYS PLANNING STUDY   EAST ZONE   ECONOMIC ANALYSIS
$ DATA IP01R5
$ TIME=400
$ EXECUTE IP01E1   CHARGE=??????
```

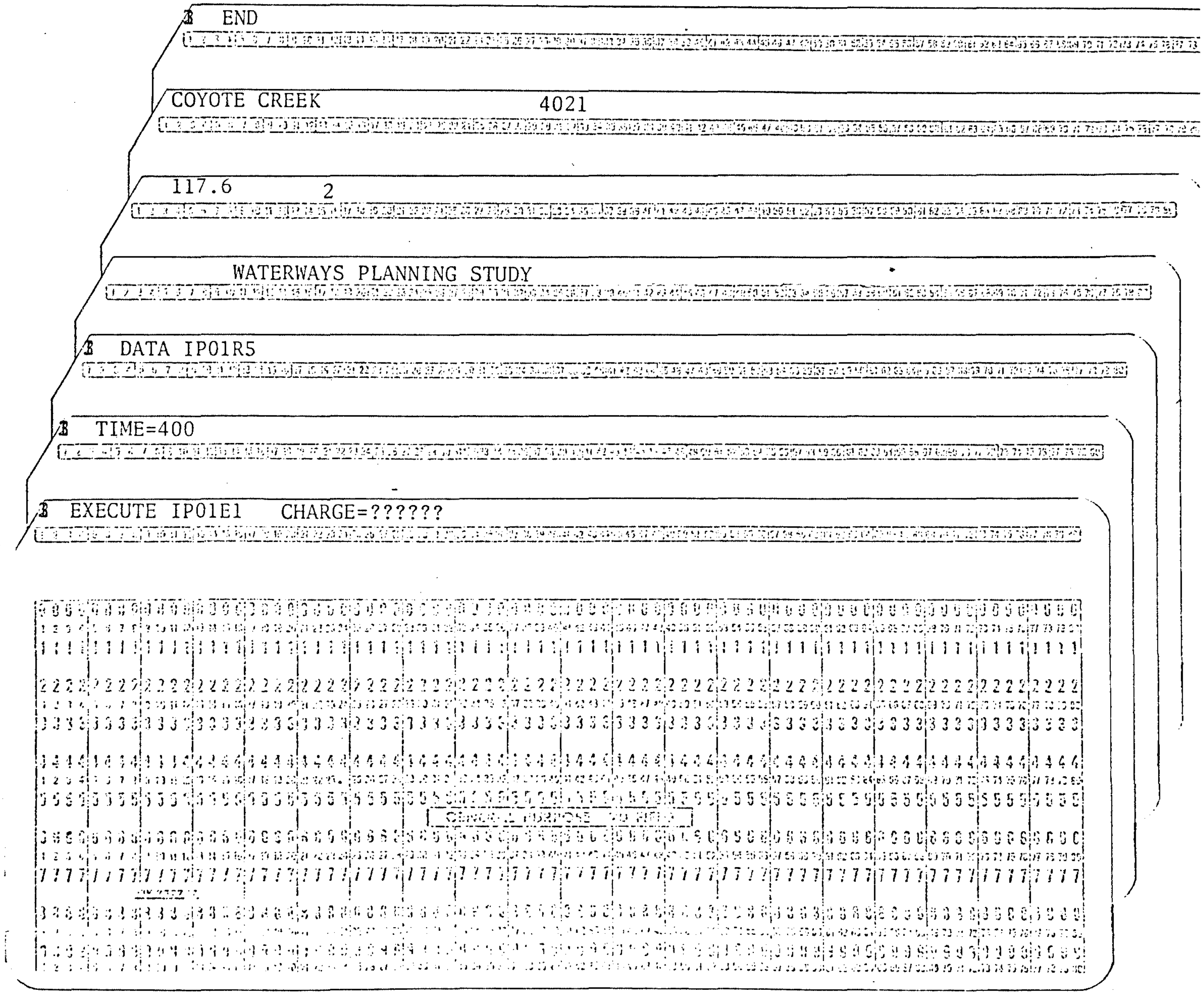
GENERAL PURPOSE 80 FIELD

1 % FLOOD DAMAGES

CREEK LOCATION	STATION	AREA FLOODED ACRES	NUMBER OF BLDGS	VALUE /BLDG (1000$)	DIRECT STRUC DAMAGE (1000$)	DIRECT CONTENT DAMAGE (1000$)	INDIRECT DAMAGES (1000$)	TOTAL FLOOD DAMAGES (1000$)
COYOTE CREEK CONFL.W/BAY	0.00							
TOTALS		0.	0.					0.
COYOTE CREEK D/S OLD MILPITAS SEWAGE	485.00							
SF RESIDENT		125.	574.	109.	6851.	2055.	1336.	10243.
APT RESID		15.	105.	175.	1238.	371.	241.	1850.
SCHLS,PUBLC		78.	0.	10296.	0.	0.	0.	0.
OPEN IMPRVD		130.						29.
AGRICULTURE		340.						20.
VACANT LAND		50.						0.
TOTALS		738.	679.					12142.
CRITICAL FACILITIES: SEWAGE TREATMENT PLANT								
COYOTE CREEK D/S RT. 237	595.00							
TOTALS		0.	0.					0.
COYOTE CREEK N. OF AGNEWS ST. HOSP.	630.00							
MOBILE HOME		25.	400.	51.	363.	109.	71.	543.
COMMERCIAL		6.	1.	3065.	12.	25.	13.	50.
AGRICULTURE		382.						24.
TOTALS		413.	401.					617.
CRITICAL FACILITIES: AGNEWS ST. HOSP.(EAST)								

EXAMPLE 1B

Flood Insurance
(Job Option 2)



```
$ END
COYOTE CREEK                  4021
117.6        2
     WATERWAYS PLANNING STUDY
$ DATA IP01R5
$ TIME=400
$ EXECUTE IP01E1    CHARGE=??????
```

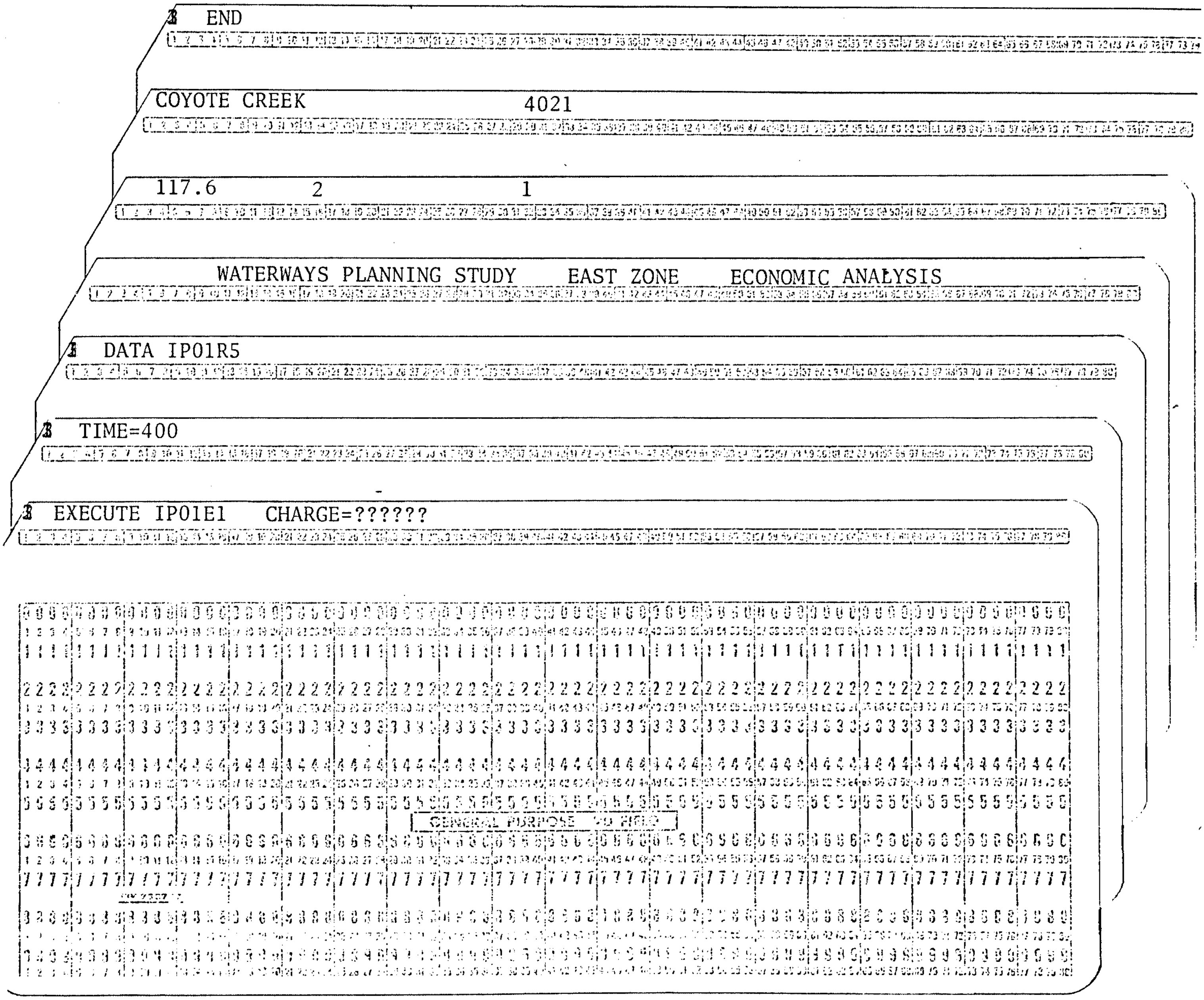
```
                          WATERWAYS PLANNING STUDY    EAST ZONE    ECONOMIC ANALYSIS                                6/11/82

                                   C O S T   O F   F L O O D   I N S U R A N C E


        CREEK                                NUMBER     VALUE     REQUIRED     OPTIONAL    INSURANCE    TOTAL      PRESENT
         LOCATION               STATION       OF        /BLDG     STRUCTURE    ADDITION       ON        ANNUAL     WORTH OF
                                             BLDGS     (1000$)    INSURANCE    STRUCTURE   CONTENTS     COST       ANNUAL
                                                                   (1000$)     INSURANCE    (1000$)     (1000$)    (1000$)


  COYOTE CREEK
   CONFL.W/BAY                    0.00

              TOTALS                                                 0.0                                 0.0

  COYOTE CREEK
    D/S OLD MILPITAS SEWAGE     485.00
              SF RESIDENT                      574.       109.       140.6        16.3        88.3      245.2      2311.7
              APT RESID                        105.       175.        51.4         0.0        25.2       76.6       722.0
              SCHLS.PUBLC                        0.     10296.         0.0         0.0         0.0        0.0         0.0

              TOTALS                                                 192.0                               321.8

  COYOTE CREEK
   D/S RT. 237                  595.00

              TOTALS                                                 0.0                                 0.0

  COYOTE CREEK
   N. OF AGNEWS ST. HOSP.       630.00
              MOBILE HOME                      400.        31.        36.3         0.0        13.6       49.9       470.5
              COMMERCIAL                         1.      3065.         1.2         0.3         3.8        5.3        50.3

              TOTALS                                                  37.5                                55.3

  COYOTE CREEK
    AT AGNEWS ST. HOSP.         665.00

              TOTALS                                                 0.0                                 0.0
```

```
                WATERWAYS PLANNING STUDY    EAST ZONE    ECONOMIC ANALYSIS                           6/11/82

                                      S U M M A R Y

  LAND USE             NUMBER     REQUIRED     OPTIONAL     INSURANCE    TOTAL     PRESENT
                         OF       STRUCTURE    ADDITION        ON        ANNUAL    WORTH OF
                       BLDGS      INSURANCE    STRUCTURE    CONTENTS     COST      ANNUAL
                                   (1000$)     INSURANCE     (1000$)     (1000$)   (1000$)


     SF RESIDENT       15946.       3892.6        369.7       2379.5     6641.9     62613.3
     APT RESID          2205.        575.3          0.0        265.7      840.9      7927.6
     MOBILE HOME        2419.        434.8          0.6        174.6      610.0      5750.3
     COMMERCIAL          489.        260.8         50.3        880.9     1192.0     11236.9
     INDUSTRIAL          454.        453.9          0.0        953.2     1407.1     13265.1
     SCHLS,PUBLC          77.         75.6          0.0        158.9      234.5      2210.8
     OPEN IMPRVD           3.          0.0          0.0          0.0        0.0         0.0
     AGRICULTURE           0.          0.0          0.0          0.0        0.0         0.0
     VACANT LAND           0.          0.0          0.0          0.0        0.0         0.0


     TOTAL             21592.       5693.1        420.6       4812.8    10926.5    103004.0


IF INFORMATION FOR MORE THAN ONE CREEK IS BEING SUMMARIZED HERE, DATA ASSOCIATED WITH AN
AREA WHICH FLOODS FROM MORE THAN ONE OF THE CREEKS BEING ANALYZED IS COUNTED ONLY ONCE.
FOR EXAMPLE, IF TWO CREEKS ARE BEING ANALYZED, THEN DAMAGES, INSURANCE COSTS, ACQUISITION
COSTS, ETC. RESULTING FROM THE COMINGLING FLOODPLAIN WHICH FLOODS TO A COMBINED DEPTH OF
3 FT. IS COUNTED ONLY ONCE IN THIS SUMMARY.  HOWEVER, THESE VALUES ARE LISTED IN EACH OF
THE CREEK'S OUTPUT ABOVE AS THOUGH THE FLOODPLAIN WAS NOT COMINGLED AND AS THOUGH THE
TOTAL DEPTH OF FLOODING WAS FROM EACH CREEK ALONE, I.E., THE INDIVIDUAL LISTINGS FOR BOTH
CREEKS WILL EACH INCLUDE THE COMINGLING FLOODPLAIN AREAS AND WILL EACH REFLECT THE,
COMBINED FLOOD DEPTH.
```

EXAMPLE 1C

Floodproofing and Floodplain Acquisiton Costs with Flooding Less than 1 Foot Included

(Job Option 2)



```
$ END
COYOTE CREEK                           4021
 117.6             2                   1
             WATERWAYS PLANNING STUDY     EAST ZONE     ECONOMIC ANALYSIS
$  DATA IP01R5
$  TIME=400
$  EXECUTE IP01E1    CHARGE=??????
```

GENERAL PURPOSE 80 FIELD

```
                         WATERWAYS PLANNING STUDY    EAST ZONE    ECONOMIC ANALYSIS                                 6/11/82

                                      C O S T    O F    F L O O D    I N S U R A N C E


       CREEK                             NUMBER     VALUE      REQUIRED    OPTIONAL    INSURANCE   TOTAL      PRESENT
         LOCATION              STATION    OF       /BLDG      STRUCTURE   ADDITION       ON       ANNUAL     WORTH OF
                                         BLDGS    (1000$)     INSURANCE   STRUCTURE   CONTENTS     COST       ANNUAL
                                                               (1000$)    INSURANCE    (1000$)    (1000$)    (1000$)


   COYOTE CREEK
    CONFL.W/BAY                  0.00

                TOTALS                                           0.0                               0.0

   COYOTE CREEK
     D/S OLD MILPITAS SEWAGE   485.00
                SF RESIDENT               574.       109.        140.6       16.3        88.3      245.2      2311.7
                APT RESID                 105.       175.         51.4        0.0        25.2       76.6       722.0
                SCHLS.PUBLC                 0.         0.          0.0        0.0         0.0        0.0         0.0

                TOTALS                                         192.0                             321.8

   COYOTE CREEK
    D/S RT. 237                595.00

                TOTALS                                           0.0                               0.0

   COYOTE CREEK
    N. OF AGNEWS ST. HOSP.     630.00
                MOBILE HOME                 0.         0.          0.0        0.0         0.0        0.0         0.0
                COMMERCIAL                  0.         0.          0.0        0.0         0.0        0.0         0.0

                TOTALS                                           0.0                               0.0

   COYOTE CREEK
     AT AGNEWS ST. HOSP.       665.00

                TOTALS                                           0.0                               0.0
```

SUMMARY

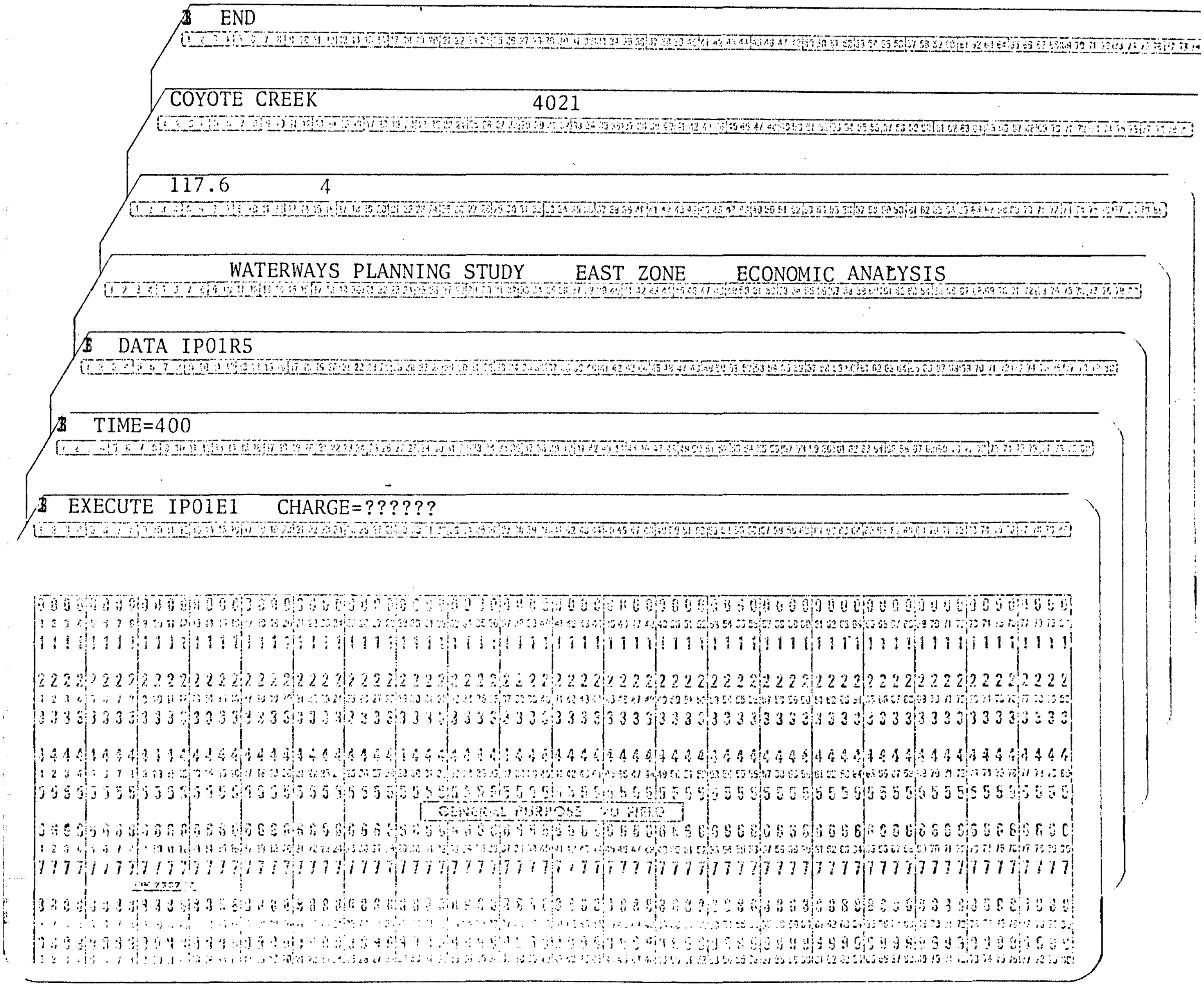
LAND USE	NUMBER OF BLDGS	REQUIRED STRUCTURE INSURANCE (1000$)	OPTIONAL ADDITION STRUCTURE INSURANCE	INSURANCE ON CONTENTS (1000$)	TOTAL ANNUAL COST (1000$)	PRESENT WORTH OF ANNUAL (1000$)
SF RESIDENT	5147.	1260.8	123.9	774.8	2159.5	20357.7
APT RESID	612.	216.0	0.0	103.4	319.4	3011.0
MOBILE HOME	254.	54.6	0.0	22.2	76.8	723.8
COMMERCIAL	60.	59.6	14.4	190.8	264.9	2497.2
INDUSTRIAL	115.	114.8	0.0	241.1	355.8	3354.6
SCHLS,PUBLC	14.	14.4	0.0	30.3	44.7	421.4
OPEN IMPRVD	3.	0.0	0.0	0.0	0.0	0.0
AGRICULTURE	0.	0.0	0.0	0.0	0.0	0.0
VACANT LAND	0.	0.0	0.0	0.0	0.0	0.0
TOTAL	6205.	1720.2*	138.3	1362.6	3221.1	30365.7

* REQUIRED STRUCTURE INSURANCE WHICH RESIDENTS WILL EVENTUALLY HAVE TO PAY. PROPERTIES SUBJECT TO FLOODING OF LESS THAN 1 FOOT ARE NOT INCLUDED IN THIS FIGURE.

IF INFORMATION FOR MORE THAN ONE CREEK IS BEING SUMMARIZED HERE, DATA ASSOCIATED WITH AN AREA WHICH FLOODS FROM MORE THAN ONE OF THE CREEKS BEING ANALYZED IS COUNTED ONLY ONCE. FOR EXAMPLE, IF TWO CREEKS ARE BEING ANALYZED, THEN DAMAGES, INSURANCE COSTS, ACQUISITION COSTS, ETC. RESULTING FROM THE COMINGLING FLOODPLAIN WHICH FLOODS TO A COMBINED DEPTH OF 3 FT. IS COUNTED ONLY ONCE IN THIS SUMMARY. HOWEVER, THESE VALUES ARE LISTED IN EACH OF THE CREEK'S OUTPUT ABOVE AS THOUGH THE FLOODPLAIN WAS NOT COMINGLED AND AS THOUGH THE TOTAL DEPTH OF FLOODING WAS FROM EACH CREEK ALONE, I.E., THE INDIVIDUAL LISTINGS FOR BOTH CREEKS WILL EACH INCLUDE THE COMINGLING FLOODPLAIN AREAS AND WILL EACH REFLECT THE, COMBINED FLOOD DEPTH.

EXAMPLE 1D

Summary (Damages, Insurance, FLoodproofing Acquisition)
(Job Option 4)



```
$ END
COYOTE CREEK                        4021
117.6         4
            WATERWAYS PLANNING STUDY    EAST ZONE    ECONOMIC ANALYSIS
$ DATA IP01R5
$ TIME=400
$ EXECUTE IP01E1    CHARGE=??????
```

GENERAL PURPOSE 80 FIELD

DAMAGES-INSURANCE-FLOODPROOFING-ACQUISITION

CREEK LOCATION		STATION	AREA FLOODED ACRES	NUMBER OF BLDGS	1%FLOOD DAMAGES (1000$)	ANNUAL INSURANCE (1000$/YR)	FLOOD PROOFING (1000$)	FLOODPLAIN ACQUISITION (1000$)
COYOTE CREEK CONFL.W/BAY		0.00						
	TOTALS		0.	0.	0.	0.0	0.	0.
COYOTE CREEK D/S OLD MILPITAS SEWAGE		485.00						
	SCHLS,PUBLC		0.	0.	0.	0.0	466.	0.
	AGRICULTURE		63.	0.	20.	0.0	0.	9921.
	VACANT LAND		0.	0.	0.	0.0	0.	0.
	TOTALS		63.	0.	20.	0.0	466.	9921.
COYOTE CREEK D/S RT. 237		595.00						
	TOTALS		0.	0.	0.	0.0	0.	0.
COYOTE CREEK N. OF AGNEWS ST. HOSP.		630.00						
	SF RESIDENT		87.	436.	10296.	165.8	4360.	52310.
	MOBILE HOME		50.	402.	3955.	156.4	762.	55913.
	COMMERCIAL		16.	3.	1182.	14.5	479.	12396.
	INDUSTRIAL		73.	88.	6442.	272.3	711.	38093.
	SCHLS,PUBLC		12.	0.	0.	0.0	240.	1926.
	AGRICULTURE		1250.	0.	59.	0.0	0.	204914.
	VACANT LAND		234.	0.	0.	0.0	0.	36509.
	TOTALS		1723.	930.	21933.	609.0	6552.	404061.

SUMMARY

```
                                  AREA      NUMBER     1%FLOOD      ANNUAL       FLOOD      FLOODPLAIN
LAND USE                         FLOODED      OF       DAMAGES     INSURANCE    PROOFING    ACQUISITION
                                  ACRES     BLDGS      (1000$)    (1000$/YR)    (1000$)      (1000$)


     SF RESIDENT                   87.       436.       10296.        165.8       4360.        52310.
     APT RESID                      0.         0.           0.          0.0          0.            0.
     MOBILE HOME                   50.       402.        3955.        156.4        762.        55913.
     COMMERCIAL                    16.         3.        1182.         14.5        479.        12396.
     INDUSTRIAL                    73.        88.        6442.        272.3        711.        38093.
     SCHLS,PUBLC                   12.         0.           0.          0.0        706.         1926.
     OPEN IMPRVD                    0.         0.           0.          0.0          0.            0.
     AGRICULTURE                 1313.         0.          79.          0.0          0.       214835.
     VACANT LAND                  234.         0.           0.          0.0          0.        38509.


     TOTAL                       1786.       930.       21953.        609.0*      7018.       413982.
```

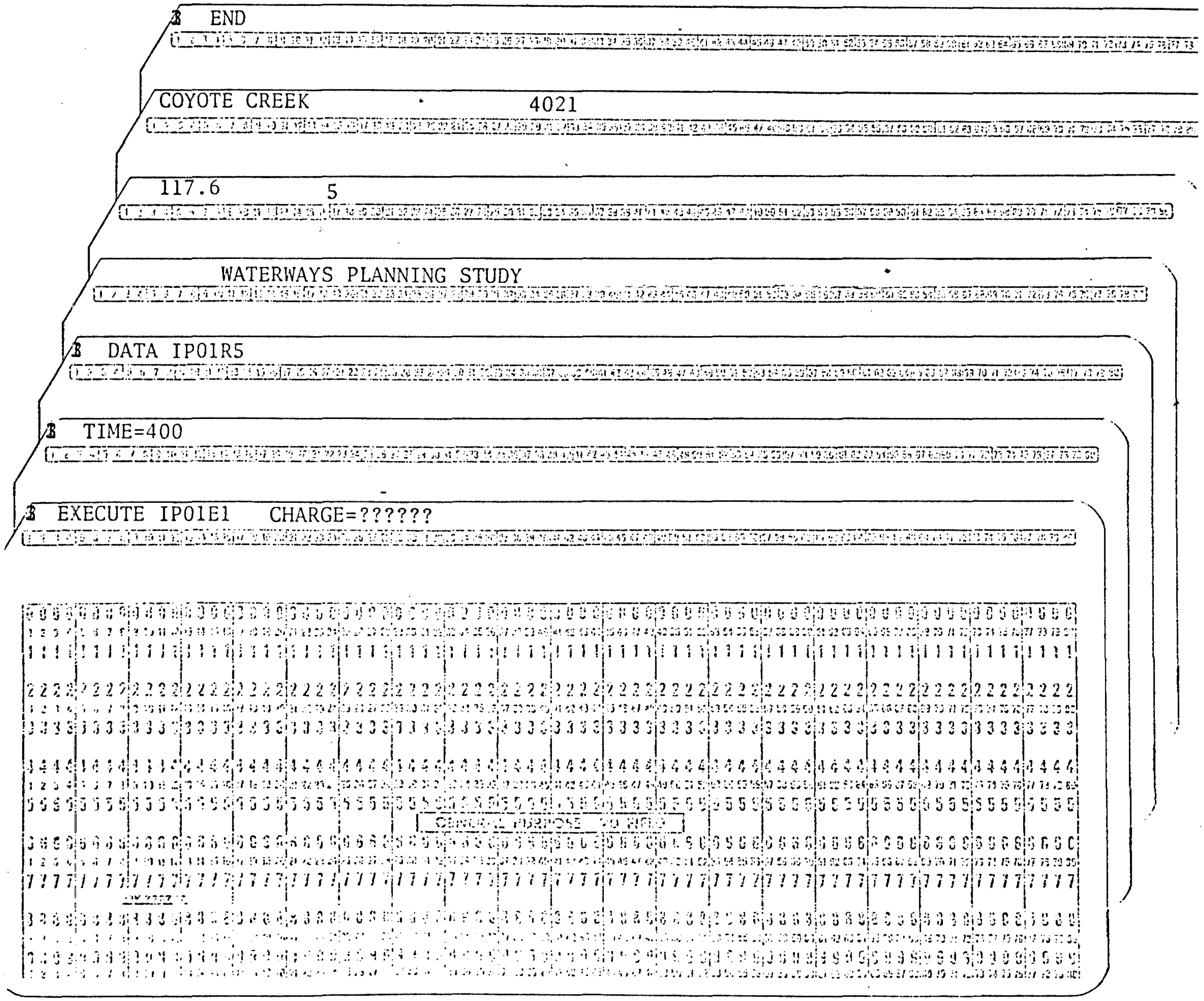
* ANNUAL INSURANCE COSTS INCLUDE COVERAGE FOR STRUCTURE AND CONTENTS BUT DOES NOT INCLUDE AREAS SUBJECT TO FLOODING OF LESS THAN 1 FOOT.

IF INFORMATION FOR MORE THAN ONE CREEK IS BEING SUMMARIZED HERE, DATA ASSOCIATED WITH AN AREA WHICH FLOODS FROM MORE THAN ONE OF THE CREEKS BEING ANALYZED IS COUNTED ONLY ONCE. FOR EXAMPLE, IF TWO CREEKS ARE BEING ANALYZED, THEN DAMAGES, INSURANCE COSTS, ACQUISITION COSTS, ETC. RESULTING FROM THE COMINGLING FLOODPLAIN WHICH FLOODS TO A COMBINED DEPTH OF 3 FT. IS COUNTED ONLY ONCE IN THIS SUMMARY. HOWEVER, THESE VALUES ARE LISTED IN EACH OF THE CREEK'S OUTPUT ABOVE AS THOUGH THE FLOODPLAIN WAS NOT COMINGLED AND AS THOUGH THE TOTAL DEPTH OF FLOODING WAS FROM EACH CREEK ALONE, I.E., THE INDIVIDUAL LISTINGS FOR BOTH CREEKS WILL EACH INCLUDE THE COMINGLING FLOODPLAIN AREAS AND WILL EACH REFLECT THE, COMBINED FLOOD DEPTH.

EXAMPLE 1E

Damage per Depth

(Job Option 5)

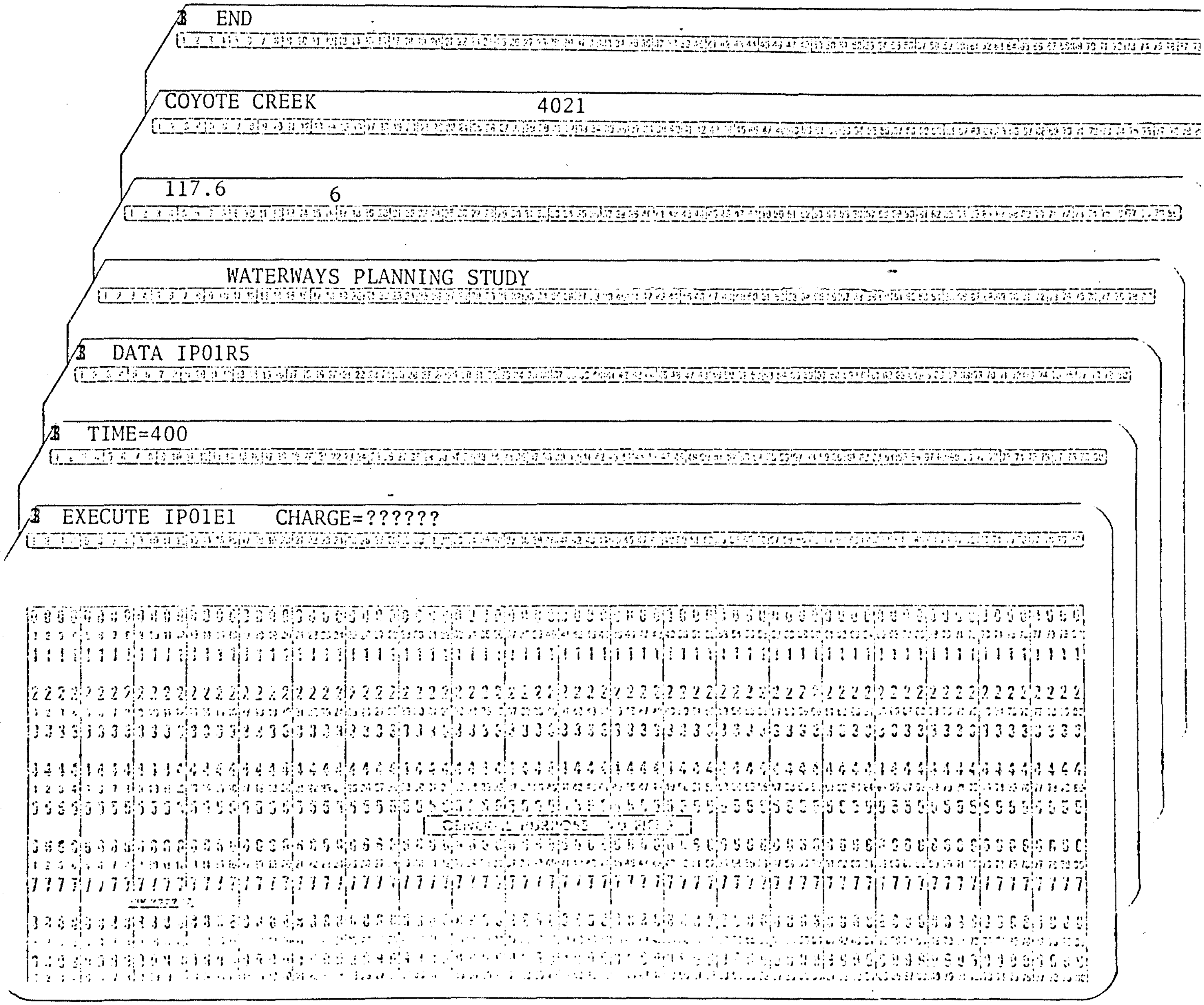


```
$ END
COYOTE CREEK                   4021
117.6           5
          WATERWAYS PLANNING STUDY
$ DATA IP01R5
$ TIME=400
$ EXECUTE IP01E1    CHARGE=??????
```

CREEK LOCATION	STATION	FLOOD DEPTH	AREA FLOODED ACRES	NUMBER OF BLDGS	TOTAL PROPERTY VALUE (1000$)	DIRECT STRUC DAMAGE (1000$)	DIRECT CONTENT DAMAGE (1000$)	INDIRECT DAMAGES (1000$)	TOTAL STRUCTURAL DAMAGES (1000$)
COYOTE CREEK CONFL.W/BAY	0.00								
TOTALS			0.	0.	0.				0.
COYOTE CREEK D/S OLD MILPITAS SEWAGE	485.00								
		<1	4.	1.	2570.	9.	0.	9.	35.
		1	0.	0.	0.	0.	0.	0.	0.
		2	0.	0.	0.	0.	0.	0.	0.
		3	0.	0.	0.	0.	0.	0.	0.
		>3	0.	0.	0.	0.	0.	0.	0.
COMMERCIAL			4.	1.	2570.	9.	17.	9.	35.
		<1	0.	0.	0.	0.	0.	0.	0.
		1	0.	0.	0.	0.	0.	0.	0.
		2	0.	0.	0.	0.	0.	0.	0.
		3	0.	0.	0.	0.	0.	0.	0.
		>3	57.	0.	7524.	0.	0.	0.	0.
INDUSTRIAL			57.	0.	7524.	0.	0.	0.	0.
AGRICULTURE			340.						21.
VACANT LAND			58.						0.
TOTALS			459.	1.	58478.				56.
COYOTE CREEK D/S RT. 237	595.00								
TOTALS			0.	0.	0.				0.
COYOTE CREEK N. OF AGNEWS ST. HOSP.	630.00								
		<1	0.	0.	0.	0.	0.	0.	0.
		1	0.	0.	0.	0.	0.	0.	0.
		2	0.	0.	0.	0.	0.	0.	0.
		3	0.	0.	0.	0.	0.	0.	0.
		>3	87.	436.	42118.	6887.	2066.	1343.	10296.
SF RESIDENT			87.	436.	42118.	6887.	2066.	1343.	10296.
		<1	33.	264.	29535.	653.	0.	127.	977.

EXAMPLE 1F

Flood and Auto Damages
(Job Option 6)



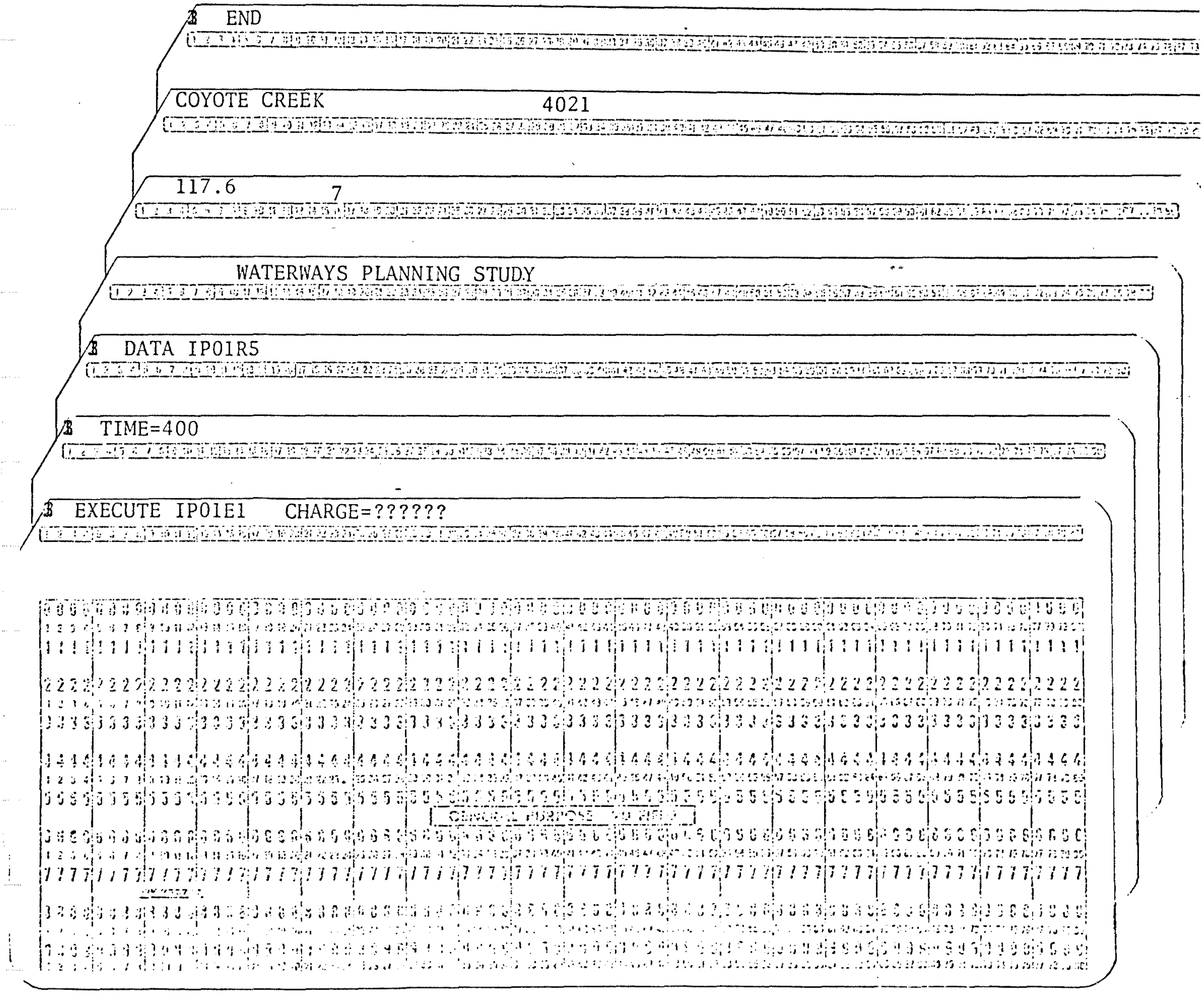
```
$ END
COYOTE CREEK                    4021
117.6          6
          WATERWAYS PLANNING STUDY
$ DATA IP01R5
$ TIME=400
$ EXECUTE IP01E1    CHARGE=??????
```

```
                                   WATERWAYS MANAGEMENT MODEL                                            9/26/83

      CREEK                                  AREA      NUMBER     TOTAL      TOTAL      FLOOD      TOTAL
       LOCATION                  STATION   FLOODED      OF      PROPERTY  STRUCTURAL   DAMAGE      FLOOD
                                             ACRES     BLDGS      VALUE     DAMAGES   TO AUTOS    DAMAGE
                                                                 (1000$)    (1000$)    (1000$)    (1000$)


   COYOTE CREEK
    CONFL.W/BAY                    0.00

                     TOTALS                    0.         0.         0.         0.         0.         0.

   COYOTE CREEK
     D/S OLD MILPITAS SEWAGE     485.00
                     COMMERCIAL                4.         1.      2570.        35.                   35.
                     INDUSTRIAL               57.         0.      7524.         0.                    0.
                     AGRICULTURE             340.                44827.        21.                   21.
                     VACANT LAND              58.                 3556.         0.                    0.

                     TOTALS                  459.         1.     58478.        56.         0.        56.

   COYOTE CREEK
    D/S RT. 237                  595.00

                     TOTALS                    0.         0.         0.         0.         0.         0.

   COYOTE CREEK
    N. OF AGNEWS ST. HOSP.       630.00
                     SF RESIDENT              87.       436.     42118.     10296.       480.     10776.
                     MOBILE HOME             113.       907.    101493.      5737.       708.      6444.
                     COMMERCIAL               25.         5.     15488.      1232.                 1232.
                     INDUSTRIAL              137.       165.     57445.      9150.                 9150.
                     SCHLS,PUBLC             167.       200.     69935.      1730.                 1730.
                     AGRICULTURE            1817.               239804.       108.                  108.
                     VACANT LAND             580.                76697.         0.                    0.

                     TOTALS                 2926.      1713.    602980.     28253.      1187.     29440.
```

EXAMPLE 1G

Benefits for Improving the Reach

(Job Option 7)



```
$ END
COYOTE CREEK                  4021
117.6        7
         WATERWAYS PLANNING STUDY
$ DATA IP01R5
$ TIME=400
$ EXECUTE IP01E1    CHARGE=??????
```

```
                                     WATERWAYS MANAGEMENT MODEL                                                    9/26/83

          CREEK                                 1%         1%       AVERAGE*   DEVELOP-    INSURANCE   TOTAL
           LOCATION                 STATION   STRUC       AUTO      ANNUAL     MENT COST   PREMIUM     ANNUAL
                                              DAMAGE     DAMAGE     DAMAGES     SAVINGS    SAVINGS     BENEFIT
                                              (1000$)    (1000$)    (1000$)   (1000$/YR)    (1000$)     (1000$)


   COYOTE CREEK
    CONFL.W/BAY                       0.00
                                                  0.         0.         0.         0.          0.         0.

   COYOTE CREEK
     D/S OLD MILPITAS SEWAGE        485.00
                                                 56.         0.         3.       481.          0.       484.

   COYOTE CREEK
    D/S RT. 237                     595.00
                                                  0.         0.         0.         0.          0.         0.

   COYOTE CREEK
    N. OF AGNEWS ST. HOSP.          630.00
                                              28253.      1187.      1302.      2899.         36.      4238.

   COYOTE CREEK
     AT AGNEWS ST. HOSP.            665.00
                                                  0.         0.         0.         0.          0.         0.

   COYOTE CREEK
    S. AGNEWS ST. HOSP.             730.00
                                                  0.         0.         0.         0.          0.         0.

   COYOTE CREEK
    N.MONTAGUE EXPY.                740.00
                                                  0.         0.         0.         0.          0.         0.

   COYOTE CREEK
    U/S TRIMBLE RD.                 755.00
                                               8066.         0.       258.       799.          9.      1067.

   COYOTE CREEK
     D/S CHARCOT AVE.               770.00
                                                  0.         0.         0.         0.          0.         0.
```

*Does or does not include autos

IP02S1 - SEDIMENT AND EROSION

This program has four job options:

(1) channel description

(2) erosion potential evaluation

(3) sediment evaluation

(4) channel capacity check

The execution deck is set up as follows:

CARD 1	Execution Card
CARD 2	Time Card
CARD 3	Data Card
CARD 4	Title Card

Column	Variable	Format	Description
1-72	TITLE	12A6	e.g. East Zone

CARD 5 Job Card

Column	Variable	Format	Description
8	JOB	I1	Enter 1 for channel description option. Enter 2 for erosion option. Enter 3 for sediment option. Enter 4 for capacity check option.
16	IMASTR	I1	Enter 0 if only printed output is needed.

			Enter 1 if intermediate output file (IP02K3) is to be written in order to update master file. If this option is used, no creek cards should follow this Job Card. Creek numbers will be read from the primary data file (IP02K2). Enter 2 if intermediate output file (IP02K3) is to be written for specific creeks. For this option, creek cards must be used.
23-24	IDEBUG	I2	Enter 0 if no debugging output is to be written during execution. Enter a digit from 1 to 10 to have debugging statements written during execution. Level 1 will trace entrance and exist from subroutines; Level 10 will give maximum debugging aid.
32	MASTYP	I1	Enter 0 if the permanent master file will be used. Enter 1 if the alternate master file will be used.

CARD 6, 7, etc. Creek Cards

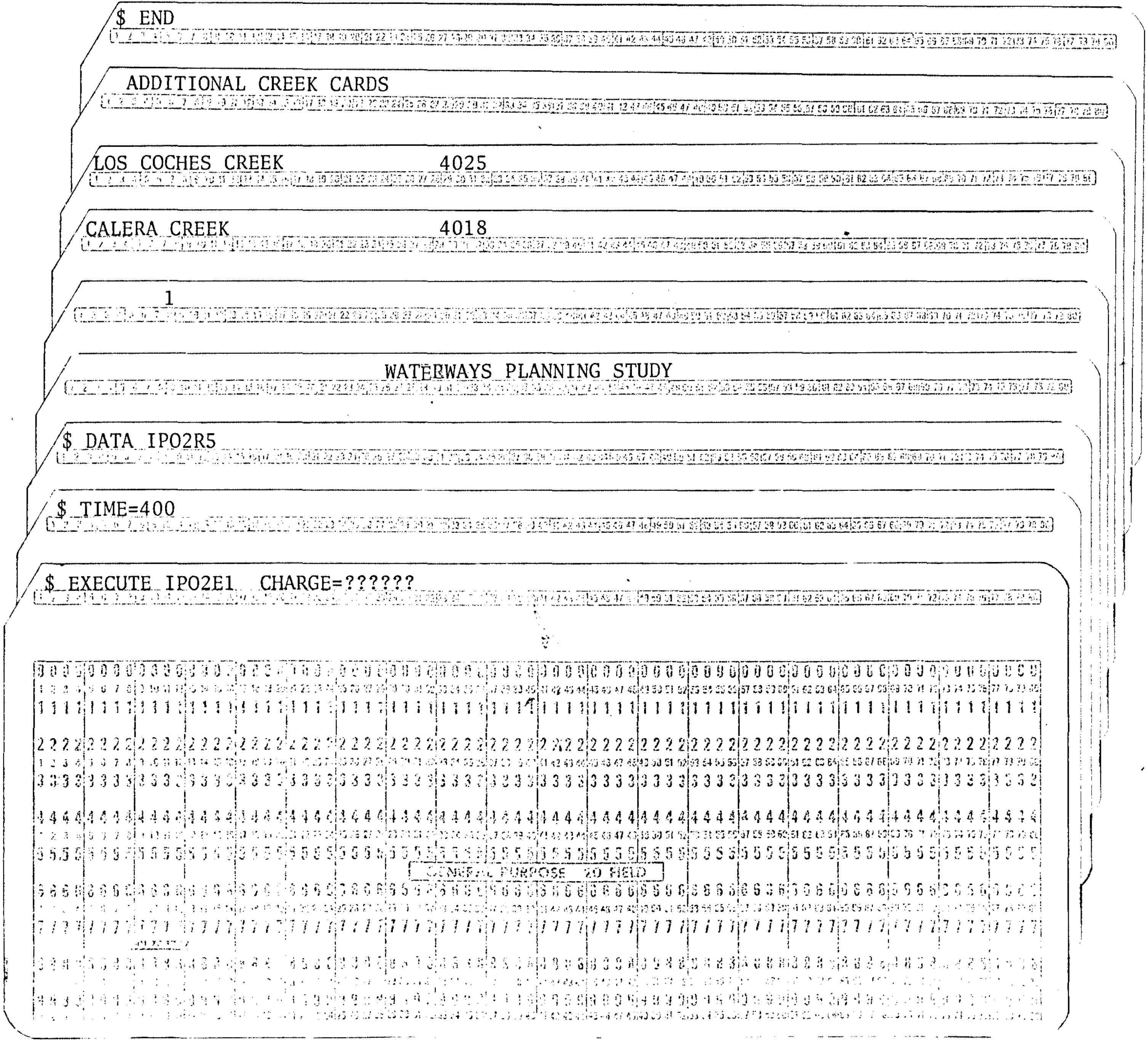
Column	Variable	Format	Description
1-24	CREEK	4A6	Name of creek
29-32	NCRKM	14	Number of creek (reference Table 3)

LAST CARD End Card

EXAMPLE 2A

Channel Description

(Job Option 1)



```
$ END
  ADDITIONAL CREEK CARDS
LOS COCHES CREEK                   4025
CALERA CREEK                       4018
             1
                                   WATERWAYS PLANNING STUDY
$ DATA IPO2R5
$ TIME=400
$ EXECUTE IPO2E1  CHARGE=??????
```

GENERAL PURPOSE 80 FIELD

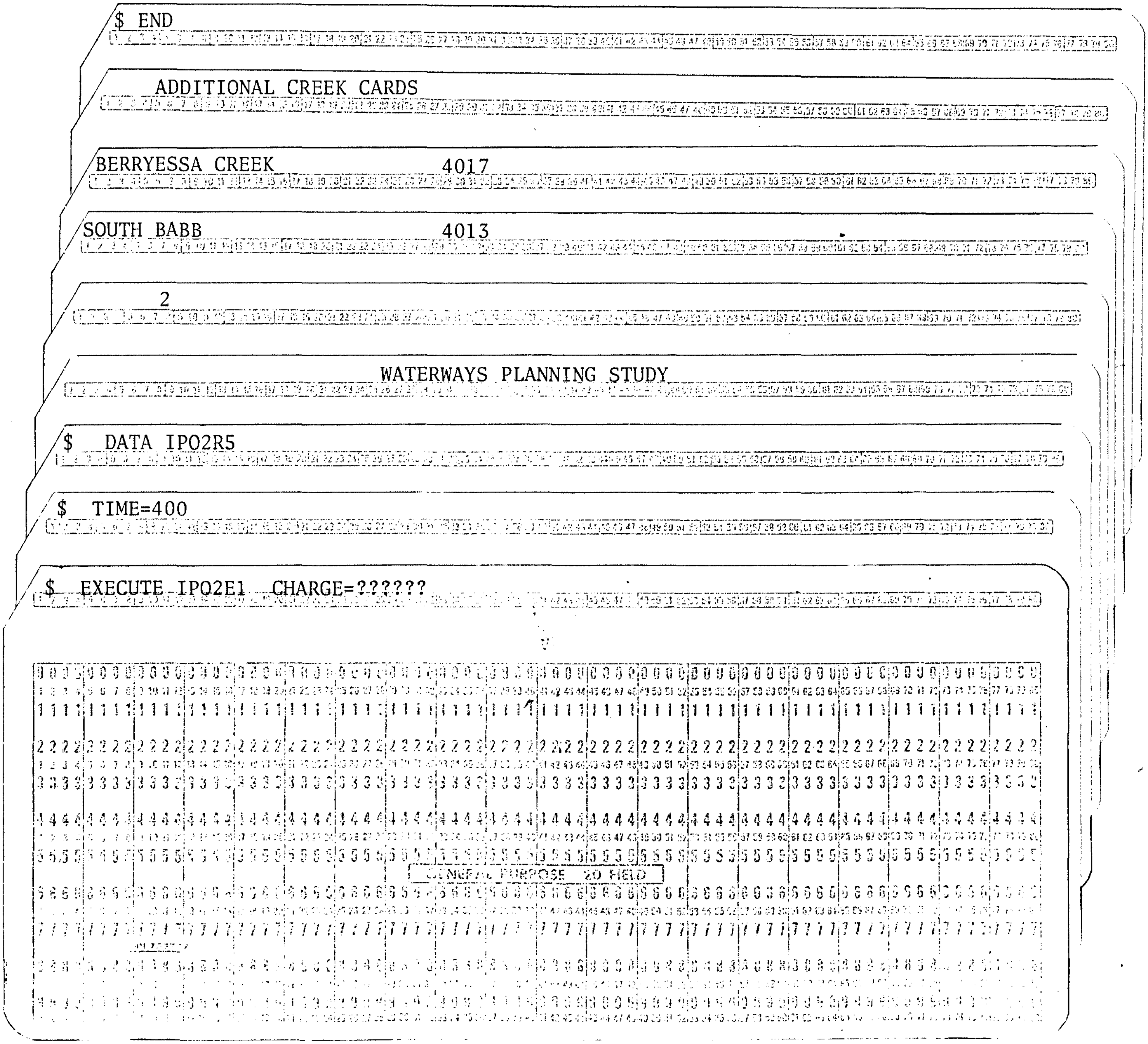
```
                                                                                          6/11/82
                                                       JOB = 1     IFILE = 0     IMASTR = 0     IDEBUG = 0
                                  WATERWAYS PLANNING STUDY

                                    CHANNEL DESCRIPTIONS

        CREEK                LOCATION              STATION   BOTTOM    SIDE     EXIST    EXIST    CHANNEL TYPE
                                                              WIDTH    SLOPE     Q1%       N


   CALERA CREEK         R,R,DBL,RCB                   0,00     22,0      0,0      410,    0,020    BOX CULVERT
   CALERA CREEK         END DBL RCB                   3,22     20,0      0,0      410,    0,020    U-FRAME CONCRETE
   CALERA CREEK        NO,MILPITAS BLVD DBL RCB       7,00     20,0      0,0      465,    0,015    BOX CULVERT
   CALERA CREEK        END DBL RCB                   10,00     10,0      2,0      465,    0,015    EXCAVATED  EARTH
   CALERA CREEK        ARIZONA DRIVE RCB             21,68     16,0      0,0      465,    0,015    BOX CULVERT
   CALERA CREEK         U/S ARIZONA DRIVE            22,32     10,0      2,0      465,    0,015    EXCAVATED  EARTH
   CALERA CREEK         MILPITAS HIGH SCHOOL         31,00      0,1      8,4      465,    0,015    MODIFIED FLOOD PLAIN
   CALERA CREEK         D/S ESQUELA PARKWAY          39,50     12,0      0,0      465,    0,015    BOX CULVERT
   CALERA CREEK         U/S ESQUELA PARKWAY          42,00     10,0      2,0      465,    0,015    MODIFIED FLOOD PLAIN
   CALERA CREEK         RUSSELL JR, HIGH             53,00      3,0      1,5      465,    0,015    EXCAVATED  EARTH
   CALERA CREEK        BEGIN I680,RCB                63,00      0,0      0,0      400,    0,015    BOX CULVERT
   CALERA CREEK         U/S FWY 680                  67,40      3,0      0,8      890,    0,045    NATURAL - UNMODIFIED
   CALERA CREEK         END OF PROJECT               83,00    LIMIT OF JURISDICTION
   LOS COCHES CREEK    BERRYESSA CONFLUENCE           0,00     10,0      1,5     1115,    0,035    EXCAVATED  EARTH
   LOS COCHES CREEK    BEGIN HWY 680 RCB              9,00     10,0      0,0     1115,    0,015    BOX CULVERT
   LOS COCHES CREEK    END OF 680 RCB                15,75     10,0      1,5     1100,    0,035    TRAPEZOIDAL CONCRETE
   LOS COCHES CREEK    8X6 RCB AT DEMPSEY & U/S      17,44      8,0      0,0     1100,    0,035    BOX CULVERT
   LOS COCHES CREEK    BEGIN EARTH CHANNEL           21,00     10,0      1,5     1100,    0,035    TRAPEZOIDAL CONCRETE
   LOS COCHES CREEK    BEGIN CONC, U FRAME           24,00     10,0      0,0     1100,    0,035    U-FRAME CONCRETE
   LOS COCHES CREEK    PARK VICTORIA   10X7 RCB      25,20     10,0      0,0     1100,    0,035    BOX CULVERT
```

```
                    SUMMARY OF CHANNEL TYPES

THERE ARE     8.70  MILES OF   PIPE
THERE ARE     2.01  MILES OF   BOX CULVERT
THERE ARE     0.73  MILES OF   U-FRAME CONCRETE
THERE ARE    12.10  MILES OF   TRAPEZOIDAL CONCRETE
THERE ARE     0.25  MILES OF   SACKED CONCRETE RIPRAP
THERE ARE     0.06  MILES OF   GABIONS - SIDES ONLY
THERE ARE     0.04  MILES OF   ROCK LINED - SIDES ONLY
THERE ARE    28.13  MILES OF   EXCAVATED  EARTH
THERE ARE     2.11  MILES OF   MODIFIED FLOOD PLAIN
THERE ARE    63.28  MILES OF   NATURAL - UNMODIFIED

TOTAL       117.41  MILES
```

EXAMPLE 2B

Erosion Potential Evaluation

(Job Option 2)



```
$ END
      ADDITIONAL CREEK CARDS
BERRYESSA CREEK                4017
SOUTH BABB                     4013
           2
                          WATERWAYS PLANNING STUDY
$    DATA IPO2R5
$    TIME=400
$    EXECUTE IPO2E1   CHARGE=??????
```

```
                                                                                                                  6/14/82
                                                                         JOB = 2     IFILE = 0     IMASTR = 0     IDEBUG = 0
***************************************************************************************************************************

                                      DEFINITIONS FOR CLASSIFYING EROSION PROBLEMS

                 1.0      STABLE     =  THERE IS NO PHYSICAL EVIDENCE OF EROSION PROBLEMS AND TRACTIVE FORCE ANALYSIS
                                        INDICATES PERMISSIBLE VELOCITIES ARE GREATER THAN ACTUAL VELOCITIES

                 2.0      POTENTIAL =  BANK APPEARS STABLE BUT TRACTIVE FORCE ANALYSIS INDICATES POTENTIALLY
                                        EROSIVE VELOCITIES

                 3.1      ACTIVE (NEGLIGIBLE)  = LESS THAN 3 INCHES OF SOIL HAS ERODED FROM BANK CHANNEL PRACTICALLY
                                                 IN  AS-BUILT CONDITION

                 3.2      ACTIVE (SLIGHT)      = BETWEEN 3 AND 12 INCHES OF SOIL HAS ERODED FROM BANK

                 4.0      URGENT     =  BANK IS ACTIVELY ERODING AWAY AND POSES AN IMMEDIATE THREAT TO STRUCTURE; OR
                                        THREATENS CONSEQUENCES SUCH AS TOTAL LEVEE FAILURE OR DROP STRUCTURE FAILURE;
                                        OR THREATENS THE DISRUPTION OF PUBLIC ROADWAY OR OPERATIONS OF PUBLIC UTILITIES

***************************************************************************************************************************
```

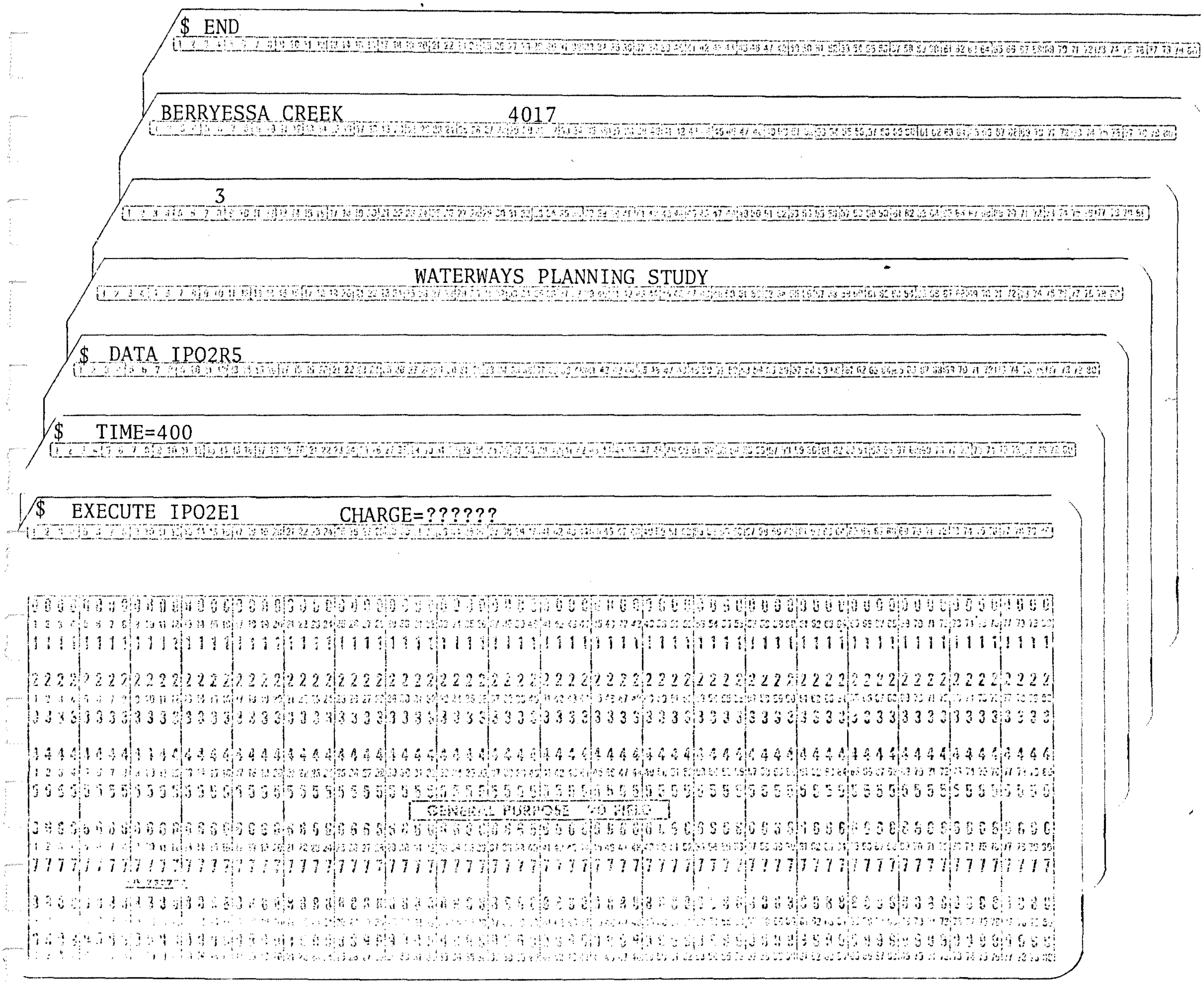
WATERWAYS PLANNING STUDY

EROSION POTENTIAL

CREEK LOCATION	STATION	OBSERVED EROSION CLASS (1.0-4.0)	ALLOWABLE VELOCITY			TRACTIVE FORCE			EROSION POTENTIAL CLASS (1.0-4.0)
			ACTUAL FT/SEC	ALLOW FT/SEC	CLASS (1-4)	ACTUAL LB/SF	ALLOW LB/SF	CLASS (1-4)	
SOUTH BABB CREEK LOWER SILVER CONFLUENCE	0.00				NON-ERODING REACH				
SOUTH BABB CREEK D/S WHITE ROAD	15.00				NON-ERODING REACH				
SOUTH BABB CREEK D/S CLAYTON ROAD	47.00	3.1	14.1	6.5	2.0	0.388	0.167	2.0	2.0
SOUTH BABB CREEK CLAYTON ROAD	50.00	3.1	14.1	6.5	2.0	0.388	0.167	2.0	2.0
SOUTH BABB CREEK D/S PINE RIDGE WAY	55.00	3.1	15.4	6.5	2.0	0.495	0.161	2.0	2.0
SOUTH BABB CREEK U/S CEDAR FLAT CT	69.00	3.1	12.4	6.6	2.0	0.381	0.164	2.0	2.0
SOUTH BABB CREEK U/S SALMON CT	75.00	3.1	6.2	7.1	1.0	0.087	0.173	1.0	1.0
SOUTH BABB CREEK D/S N. BRANCH CONFL	115.00	3.1	20.0	5.5	2.0	1.324	0.158	2.0	2.0
SOUTH BABB CREEK LIMIT OF JURISDICTION	190.50	LIMIT OF DISTRICT			JURISDICTION				
BERRYESSA CREEK L.PENITENCIA CONFL.	0.00	3.1	2.5	5.1	1.0	0.010	0.086	1.0	1.0
BERRYESSA CREEK CALERA CREEK CONFL.	9.50	3.1	3.7	5.0	1.0	0.022	0.086	1.0	1.0
BERRYESSA CREEK U/S CALERA CREEK	10.00	3.1	3.8	5.0	1.0	0.023	0.086	1.0	1.0
BERRYESSA CREEK UPSTREAM OF CALERA	15.00	3.1	4.1	6.7	1.0	0.027	0.127	1.0	1.0
BERRYESSA CREEK ABEL STREET	22.00				NON-ERODING REACH				
BERRYESSA CREEK U/S OF ABEL STREET	29.00	3.1	4.2	6.6	1.0	0.029	0.143	1.0	1.0

EXAMPLE 2C

Sediment Evaluation
(Job Option 3)



```
$ END
BERRYESSA CREEK             4017
      3
                                 WATERWAYS PLANNING STUDY
$ DATA IPO2R5
$   TIME=400
$  EXECUTE IPO2E1        CHARGE=??????
```

GENERAL PURPOSE 80 FIELD

WATERWAYS PLANNING STUDY

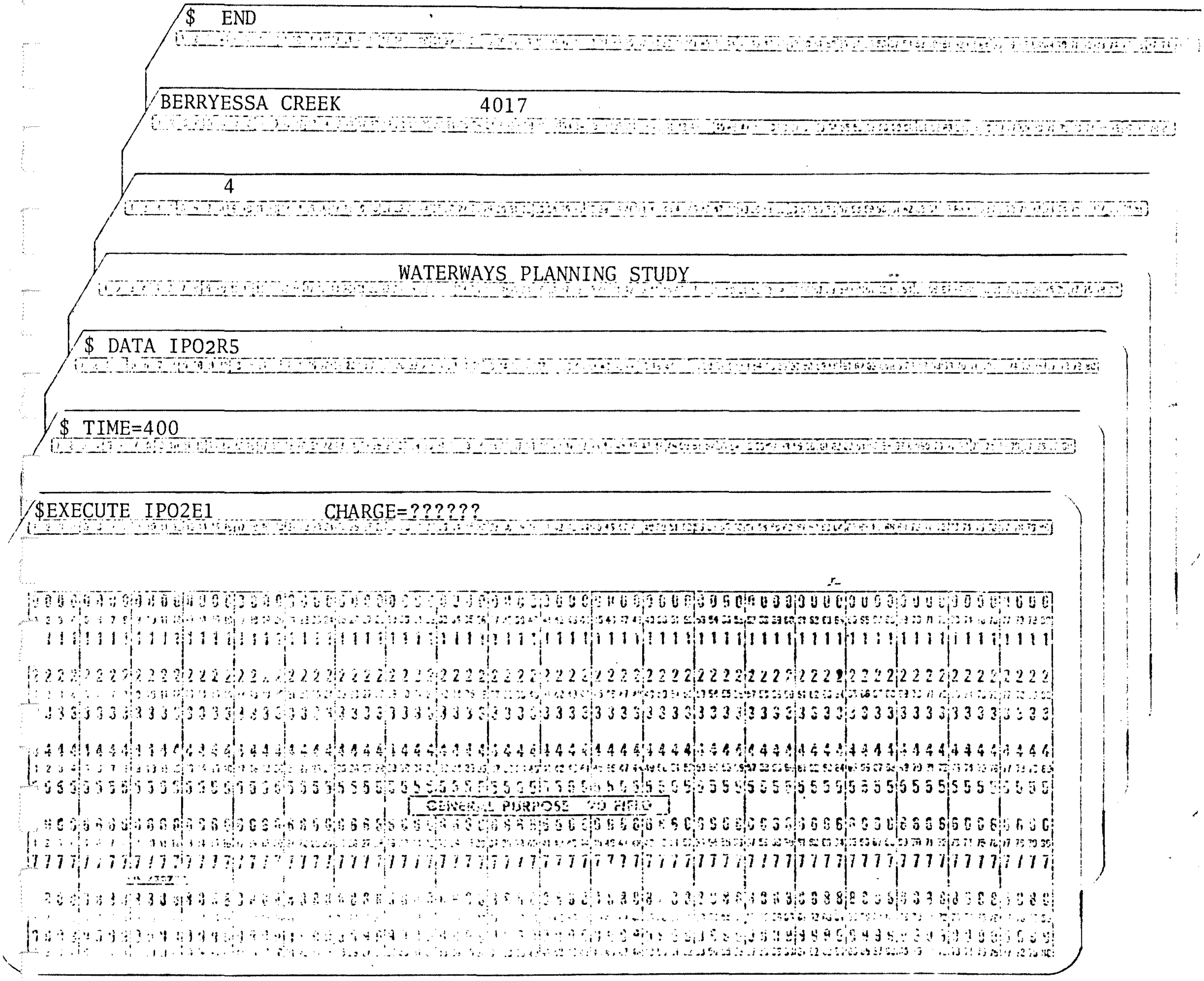
SEDIMENT POTENTIAL

CREEK LOCATION	STATION	DRAINAGE AREA (SQ MI)	RELATIVE COVER (%)	ANNUAL SEDIMENT YIELD FOR MAX.ANNUAL Q=EXISTING Q1% (AC FT/ SQ MI)	 (CUBIC YARDS)	 FOR AVE.ANNUAL Q = Q50% (AC FT/ SQ MI)	 (CUBIC YARDS)
BERRYESSA CREEK L.PENITENCIA CONFL.	0.00	22.10	80.0	3.710	132241.	1.143	40748.
BERRYESSA CREEK CALERA CREEK CONFL.	9.50	22.10	80.0	4.167	148532.	1.187	42302.
BERRYESSA CREEK U/S CALERA CREEK	10.00	22.10	80.0	4.167	148532.	1.187	42302.
BERRYESSA CREEK UPSTREAM OF CALERA	15.00	22.10	80.0	4.167	148532.	1.187	42302.
BERRYESSA CREEK ABEL STREET	22.00	19.10	80.0	4.445	136953.	1.370	42200.
BERRYESSA CREEK U/S OF ABEL STREET	29.00	17.60	80.0	4.569	129695.	1.334	37864.
BERRYESSA CREEK D/S MILPTS BLVD	49.00	17.60	80.0	4.569	129695.	1.334	37864.
BERRYESSA CREEK TULARCITOS CONFL.	76.00	17.00	80.0	4.769	130779.	1.392	38181.
BERRYESSA CREEK U/S TULARCITOS CONFL.	76.50	17.00	80.0	4.769	130779.	1.392	38181.
BERRYESSA CR CALAVERAS BLVD	86.00	15.10	80.0	4.986	121447.	1.440	35075.
BERRYESSA CR U/S CALAVERAS	90.00	15.10	80.0	4.986	121447.	1.440	35075.
BERRYESSA CR LOS COCHES CONFL	93.50	15.10	80.0	4.986	121447.	1.440	35075.
BERRYESSA CREEK U/S LOS COCHES CONFL.	94.00	11.10	80.0	5.686	101805.	1.589	28454.
BERRYESSA CREEK CONF W/PIEDMONT CRK	115.50	11.10	80.0	5.686	101805.	1.589	28454.

EXAMPLE 2D

Channel Capacity Check

(Job Option 4)



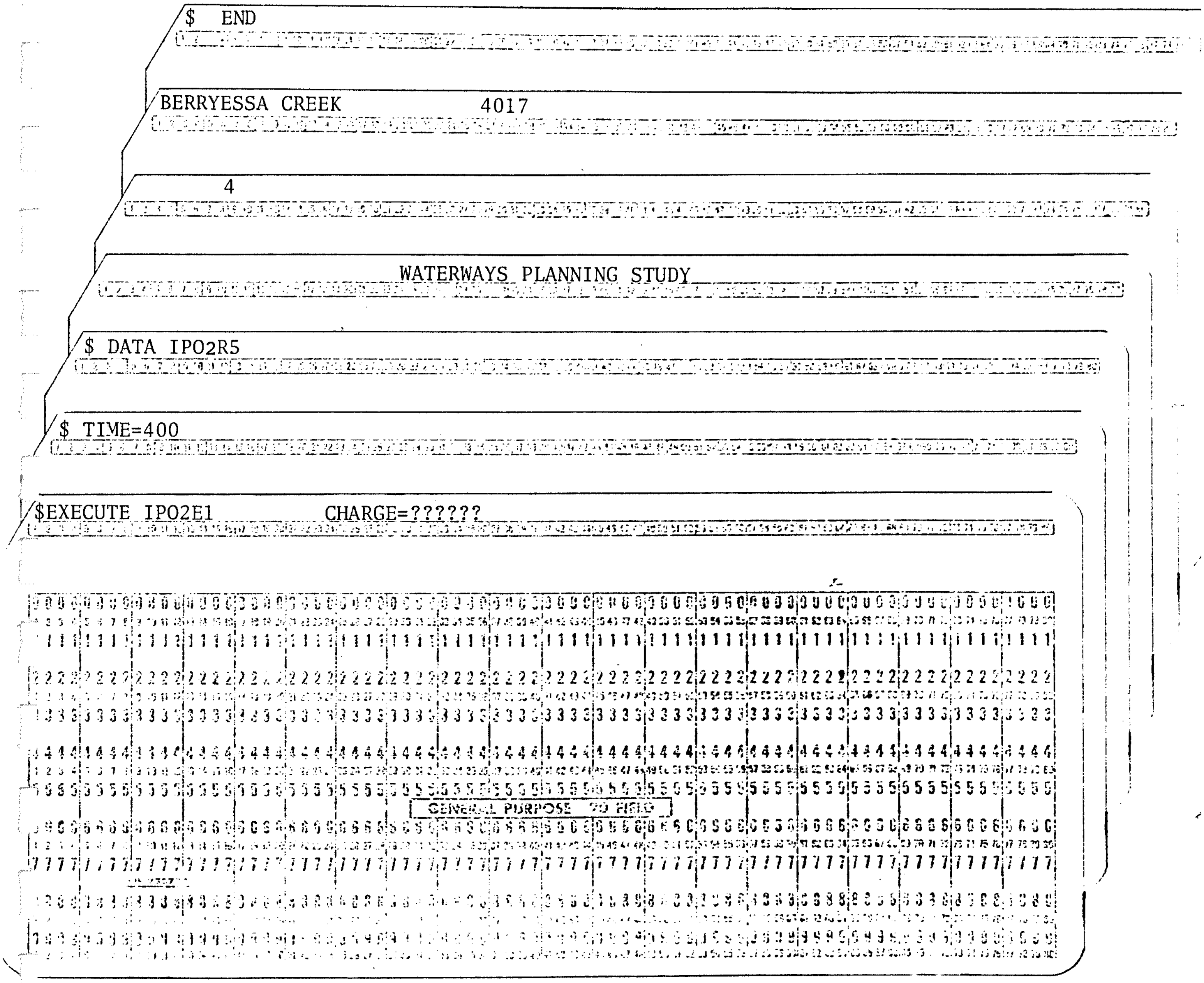
```
$ END
BERRYESSA CREEK                4017
          4
                         WATERWAYS PLANNING STUDY
$ DATA IPO2R5
$ TIME=400
$EXECUTE IPO2E1          CHARGE=??????
```

GENERAL PURPOSE 80 FIELD

EXAMPLE 2D

Channel Capacity Check

(Job Option 4)



```
$  END
BERRYESSA CREEK             4017
     4
                 WATERWAYS PLANNING STUDY
$ DATA IPO2R5
$ TIME=400
$EXECUTE IPO2E1         CHARGE=??????
```

```
                                                                                                  5/10/82
                                                            JOB = 4     IFILE = 0     IMASTR = 0    IDEBUG = 0
                                        WATERWAYS PLANNING STUDY

                                           CHANNEL CAPACITY CHECK

                                                             CHANNEL GEOMETRY
                                                 ***************************************
        CREEK                  STATION     ESTIMATED     BOTTOM    INVERT    MIN.BANK  CROSS-SEC.      CAPACITY FROM
                                            CAPACITY      WIDTH     ELEV.     ELEV.      AREA       CHANNEL GEOMETRY
                                             (CFS)        (FT)      (FT)      (FT)     (SQ.FT.)          (CFS)

     BERRYESSA CREEK
      L.PENITENCIA CONFL.         0.00        3050.        44.       0.0      13.7      1222.            3048.

     BERRYESSA CREEK
       D/S CALERA CR              9.50        4330.        44.       3.0      16.7      1222.            5030.

     BERRYESSA CREEK
      ABEL STREET                22.00        3920.        32.       3.8      16.2       551.            3925.

     BERRYESSA CREEK
      U/S OF ABEL STREET         29.00        3930.        44.       5.0      16.5       942.            3932.

     BERRYESSA CREEK
      TULARCITOS CONFL.          76.00        4770.        44.      11.0      20.0       720.            4770.

     BERRYESSA CR
       U/S TULARCITOS CREEK      77.50        3735.        44.      14.5      23.5       396.            2988.

     BERRYESSA CR
      U/S CALAVERAS              90.00        2360.         5.      15.5      23.5       104.            2616.

     BERRYESSA CR
      LOS COCHES CONFL           94.00        1660.         5.      21.5      29.5       104.            1664.

     BERRYESSA CREEK
       U/S LOS COCHES CR         95.00         500.         5.      21.5      29.5       104.            3284.

     BERRYESSA CR
       D/S PIEDMONT CR          115.50        1860.         5.      31.0      39.0       104.            2558.

     BERRYESSA CR
       U/S PIEDMONT CR          116.00        1310.         4.      37.0      49.0       192.            2712.

     BERRYESSA CR
      U/S OF AMES AVE           143.00        5130.         4.      39.0      49.0       140.            1977.

     BERRYESSA CR
      MONTAGUE EXP.D/S          166.00         790.        22.      54.0      63.0       198.             960.

     BERRYESSA  CR
      MONTAGUE EXP U/S          167.00         750.         5.      54.0      62.0       104.             750.

     BERRYESSA CR
       D/S FWY 680              192.00         750.         5.      61.5      71.5       150.             978.
```

IP03S1 - AVERAGE ANNUAL DAMAGES

This program has three job options:

1. Computes frequency of flooding and average annual damages.
2. Summary of travel times.
3. Ranks creek station by flood frequency.

The execution deck is set up as follows:

CARD 1	Execution Card
CARD 2	Time Card
CARD 3	Data Card
CARD 4	Title Card

Column	Variable	Format	Description
1-72	TITLE	12A6	e.g. Existing Channel Capacities

CARD 5 Job Card

Column	Variable	Format	Description
8	JOB	I1	Enter 1 for frequency of flooding and average annual damages option. Enter 2 for travel time option. Enter 3 for ranking of creek station by flood frequency option.
16	IMASTR	I1	Enter 0 if only printed output is needed or if JOB = 2.

			Enter 1 if intermediate output file (IP03K3) is to be written in order to update master file. If this option is used, no creek cards should follow this Job Card. Creek numbers will be read from the input file (IP03K2). Enter 2 if intermediate output file (IP01K3) is to be written for specific creeks. For this option, creek cards must be used.
23-24	IDEBUG	I2	Enter 0 if no debugging output is to be written during execution. Enter a digit area from 1 to 10 to have debugging statements written during execution. Level 1 will trace entrance and exist from subroutines; Level 10 will give maximum debugging aid.
32	MASTYP	I1	Enter 0 if the permanent master file will be used. Enter 1 if the alternative master file will be used.

IF JOB = 1 or 3, Follow with creek card.

CARD 6, 7, etc. Creek Cards

Column	Variable	Format	Description
1-24	CREEKM	4A6	Name of creek
29-32	NCRKM	I4	Number of creek (reference to Table 3)
33-40	BEGSTA	F8.0	Beginning Station, Downstream (optional)* Not available on Job #3*

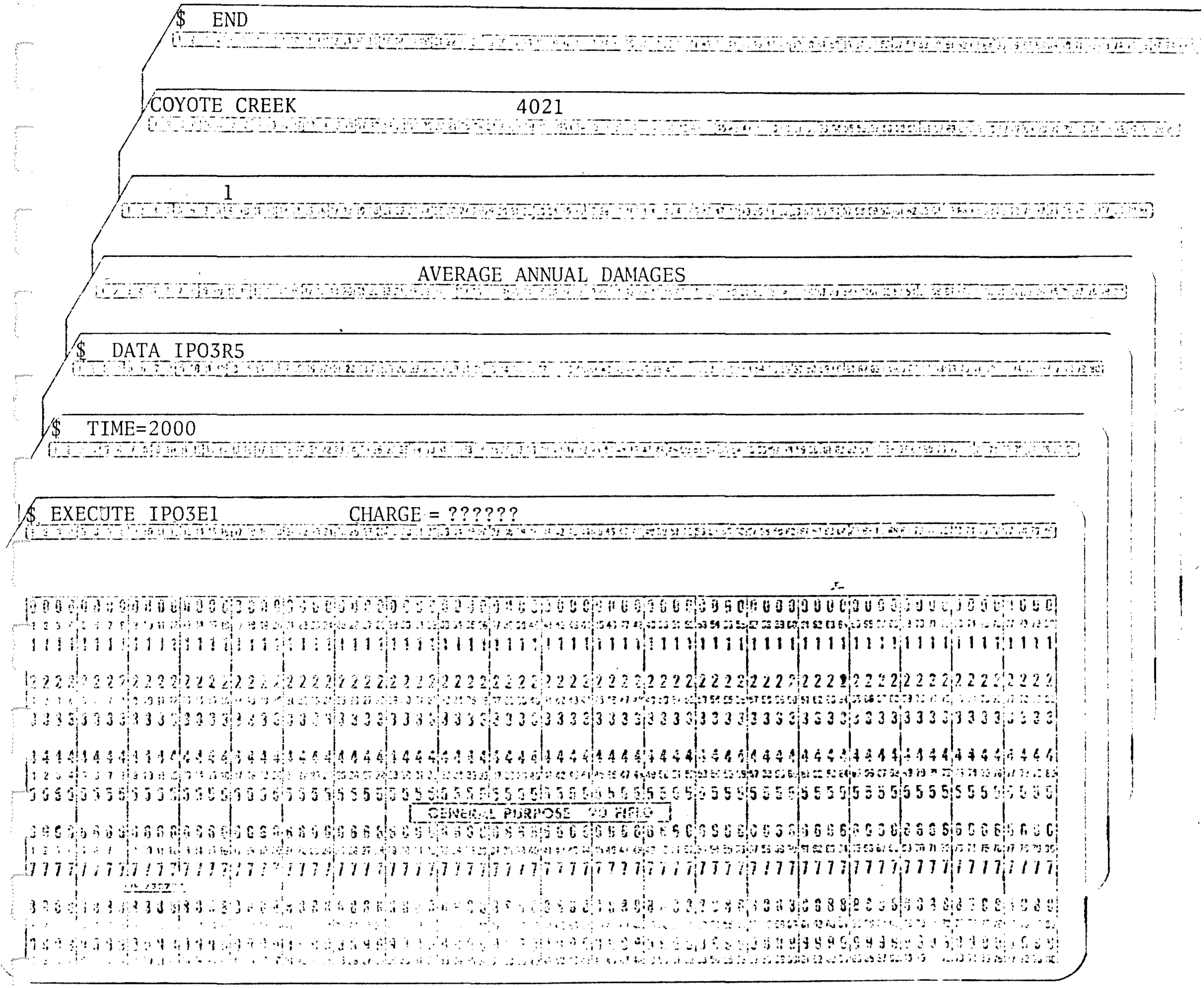
41-48	ENDSTA	F8.0	Ending Station, Upstream (optional) Not available on Job #3

*NOT AVAILABLE IN JOB OPTION 3

LAST CARD End Card

EXAMPLE 3A

Average Annual Damages
(Job Option 1)



```
$   END
COYOTE CREEK                    4021
         1
                      AVERAGE ANNUAL DAMAGES
$   DATA IPO3R5
$   TIME=2000
$ EXECUTE IPO3E1           CHARGE = ??????
```

AVERAGE ANNUAL DAMAGES

CAPACITY/FLOOD SUMMARY

CREEK LOCATION	STATION	DRAIN AREA SQ MI	MEAN ANNUAL PRECIP	DESIGN FLOWS 1% CFS	10% CFS	EXIST CONDITIONS Q1% CFS	CAPCTY CFS	N	FREQ OF FLOOD (YEAR)	FLOOD DAMAGES 1%	AVG ANN (IN 1000S)
COYOTE CREEK AT SF BAY	0.00	321.62	0.0	14500.	8300.	3500.	3500.	.045	100.	0.	0.
COYOTE CREEK D/S OLD MILPITAS SEWAGE	485.00	321.62	0.0	14500.	8300.	2100.	1200.	.045	1.	82783.	7412.
COYOTE CREEK D/S OF MCCARTHY LANE	560.00	321.62	0.0	14500.	8300.	5800.	2100.	.045	1.	38632.	3311.
COYOTE CREEK D/S HWY 237	595.00	320.00	0.0	14500.	8300.	5800.	5800.	.045	100.	0.	0.
COYOTE CREEK N OF AGNEWS ST.HOSP.	630.00	320.00	0.0	14500.	8300.	8600.	5400.	.045	3.	6166.	314.
COYOTE CREEK AT AGNEWS ST. HOSP.	665.00	320.00	0.0	14500.	8300.	8600.	8600.	.045	100.	0.	0.
COYOTE CREEK D/S MONTAGUE/TRIMBLE	734.00	319.32	0.0	14500.	8200.	8600.	8600.	.045	100.	0.	0.
COYOTE CREEK U/S MONTAGUE/TRIMBLE	735.00	319.32	0.0	14500.	8200.	8600.	8600.	.035	100.	0.	0.
COYOTE CREEK ABOVE TRIMBLE RD.	755.00	319.32	0.0	14500.	8200.	12500.	8600.	.035	11.	50732.	1443.
COYOTE CREEK D/S CHARCOT AVE.	770.00	319.32	0.0	14500.	8200.	12500.	12500.	.035	100.	0.	0.
COYOTE CREEK U/S HWY.17	800.00	319.32	0.0	14500.	8200.	12500.	12500.	.035	100.	0.	0.
COYOTE CREEK D/S SPRR	810.00	319.32	0.0	14500.	8200.	12500.	12500.	.035	100.	0.	0.
COYOTE CREEK U/S OLD OAKLAND RD.	830.00	319.32	0.0	14500.	8200.	12320.	11770.	.035	34.	18927.	330.

IF JOB = 2, follow with creek card which specifies output.

Card 6, 7, etc. Creek cards.

Column	Variable	Format	Description
1-24	CREEKM	4A6	Name of creek
29-32	NCRKM	I4	Number of creek
33-40	DSSTA	F8.0	Beginning Downstream Station (optional)*
41-48	USSTA	F8.0	Beginning Upstream Station (optional)*
49-56	QBEG	F8.0	Beginning Downstream Flow Rate (optional)**
57-64	QEND	F8.0	Ending Upstream Flow Rate (optional)**

LAST CARD End Card

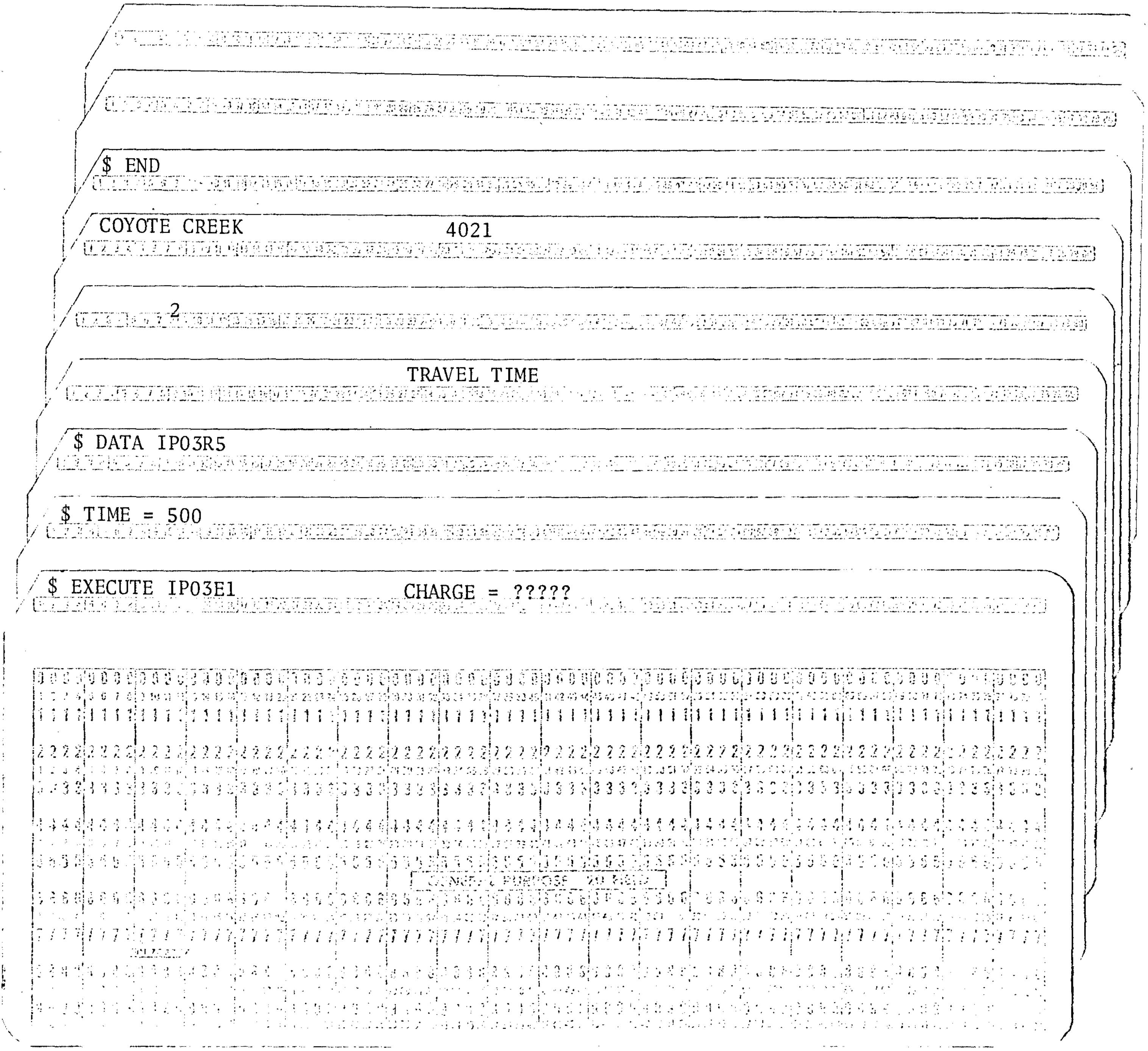
* DEFAULT is entire creek

** DEFAULT is existing 1% flow from the HECII library of existing conditions

EXAMPLE 3B

Travel Time

(Job Option 2)



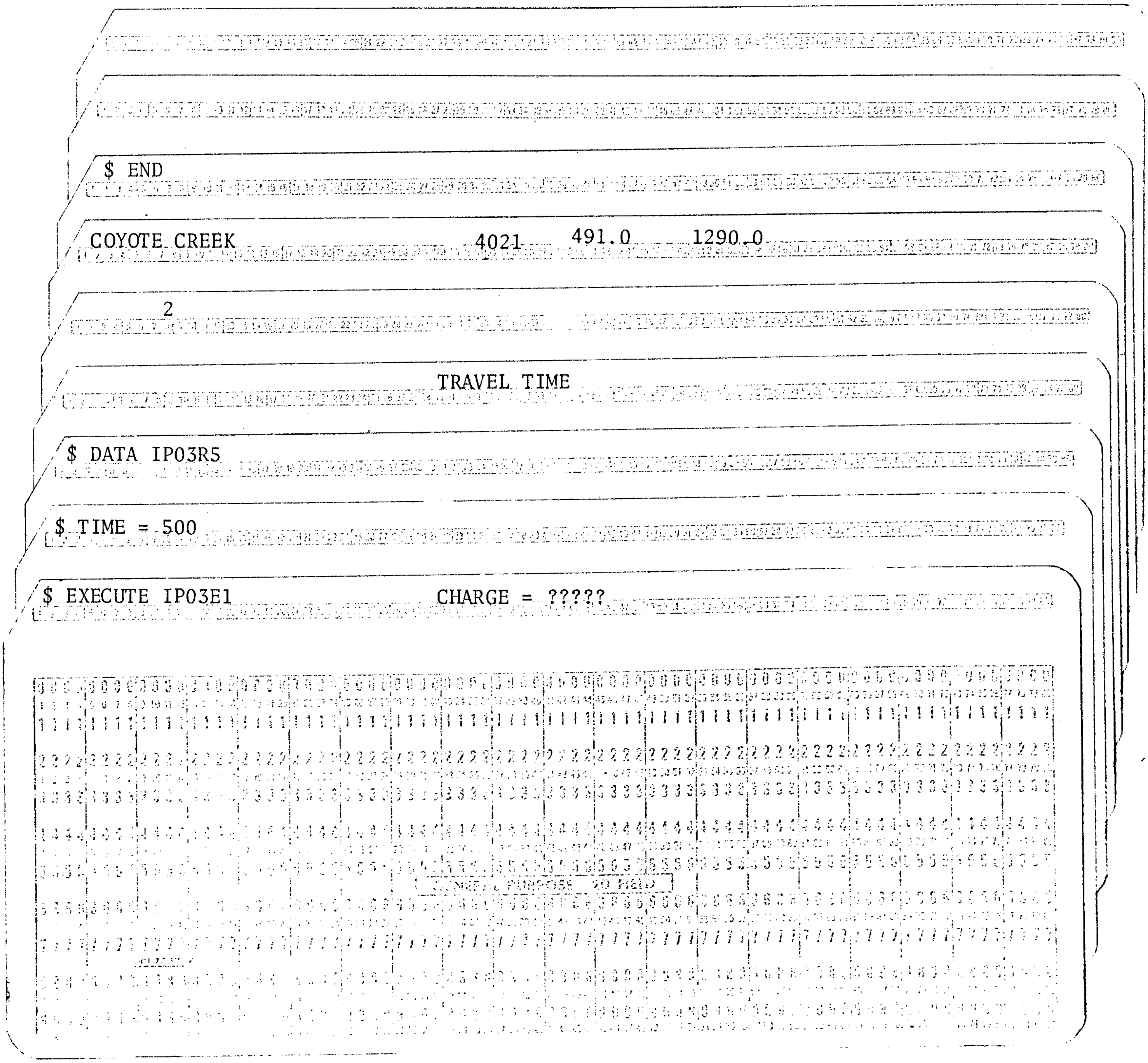
```
$ EXECUTE IP03E1              CHARGE = ?????
$ TIME = 500
$ DATA IP03R5
                            TRAVEL TIME
      2
COYOTE CREEK                  4021
$ END
```

```
                                                TRAVEL TIME                                                           3/30/83


                                      *************** 1% EVENT ***************  ************** 10% EVENT **************
 CREEK                        STATION       TIME (HOURS)            FLOW RATE         TIME (HOURS)            FLOW RATE
                                      INCREMENTAL  CUMULATIVE          (CFS)     INCREMENTAL  CUMULATIVE          (CFS)

COYOTE CREEK                    0.00        HEC II DATA NOT AVAILABLE AT THIS STATION
BAY

COYOTE CREEK                  446.00        HEC II DATA NOT AVAILABLE AT THIS STATION
@ LOWER PENITENCIA

COYOTE CREEK                  446.50        HEC II DATA NOT AVAILABLE AT THIS STATION
 D/S L.PENITENCIA CONFL

COYOTE CREEK                  447.00        HEC II DATA NOT AVAILABLE AT THIS STATION
 U/S L. PENITENCIA CR

COYOTE CREEK                  480.00       0.00         0.00           1500.         0.00         0.00           1500.
N OF DISPOSAL

COYOTE CREEK                  485.00       0.04         0.04           1492.         0.04         0.04           1492.
 D/S OLD MILPITAS SEWAGE

COYOTE CREEK                  488.00       0.03         0.07           1576.         0.03         0.07           1576.
FOOTBRIDGE

COYOTE CREEK                  491.00       0.03         0.10           1851.         0.03         0.10           1905.
 SEWAGE TREATMENT PLANT

COYOTE CREEK                  500.00       0.19         0.29            799.         0.18         0.28            798.
S OF DISPOSAL

COYOTE CREEK                  550.00       0.54         0.83           2101.         0.51         0.79           2104.
 D/S MCCARTHY LN

COYOTE CREEK                  560.00       0.10         0.93           2198.         0.10         0.89           2197.
 D/S OF MCCARTHY LANE

COYOTE CREEK                  595.00       0.17         1.10           5849.         0.17         1.06           5848.
 D/S HWY 237

NOTE:  * = FLOW DATA FOR THIS STATION IS NOT AVAILABLE IN THE HEC II DATA
```

EXAMPLE 3C

Travel Time with Reach Limits and Flowrate Specified

(Job Option 2)



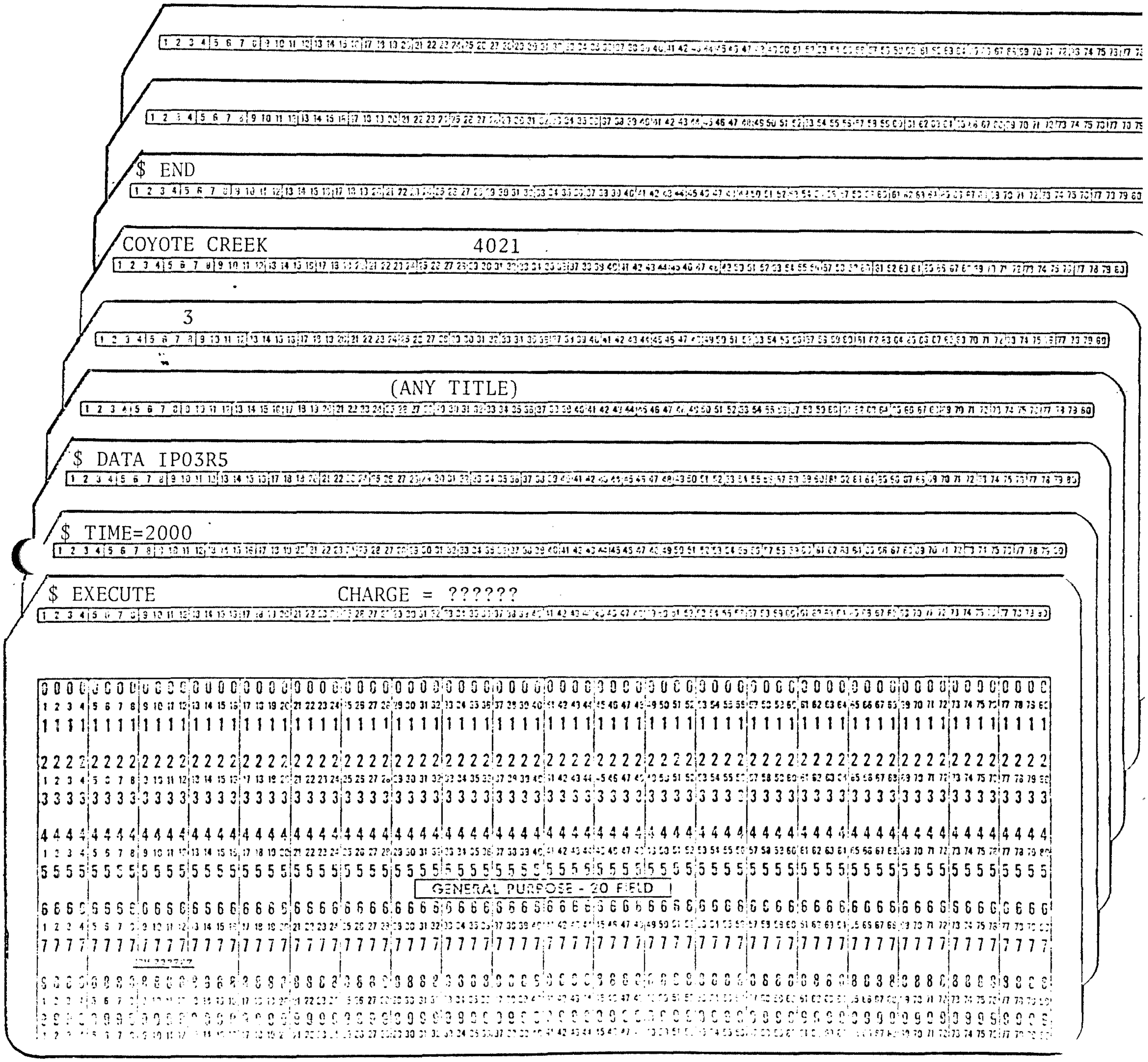
```
$ EXECUTE IP03E1              CHARGE = ?????
$ TIME = 500
$ DATA IP03R5
                             TRAVEL TIME
       2
COYOTE CREEK                  4021    491.0    1290.0
$ END
```

```
                                   TRAVEL TIME                                                       3/30/83


                                   ********* 1% EVENT ********      ******* 10% EVENT *******
 CREEK                STATION        TIME         FLOW RATE           TIME         FLOW RATE
                                    (HOURS)         (CFS)            (HOURS)         (CFS)

COYOTE CREEK           491.00        0.00           1851.             0.00           1905.
 SEWAGE TREATMENT PLANT

COYCTE CREEK          1340.00        4.55          13322.             5.03           4000.
 U/S CAPITOL EXPWY
```

EXAMPLE 3D

Rank Creek Stations By Flood Frequency

(Job Option 3)



```
$ END
COYOTE CREEK                  4021
         3
                    (ANY TITLE)
$ DATA IP03R5
$ TIME=2000
$ EXECUTE                  CHARGE = ??????
```

NO	CREEK NAME	POINT OF FLOODING	CREEK STATION	EXIST Q1% CFS	EXIST CAPACITY CFS	FREQUENCY FLOODING (YEARS)	FREQUENCY FLOODING (%)
25	UPPER PENITENCIA CREEK	MABURY RD	55.00	1350.00	1050.00	5.	21.
26	LOWER SILVER CREEK	U/S LAKE CUNNINGHAM	290.00	2970.00	2600.00	5.	20.
27	UPPER PENITENCIA CREEK	D/S CAPITOL AVE	117.50	3600.00	1350.00	7.	15.
28	COYOTE CREEK	D/S UPPER PENITENCIA	904.50	12300.00	7300.00	7.	14.
29	COYOTE CREEK	U/S TRAILER PARK	870.00	12300.00	7300.00	7.	14.
30	SOUTH BABB CREEK	D/S WHITE RD	15.00	570.00	390.00	7.	14.
31	CALERA CREEK	D/S FWY 680	63.00	895.00	400.00	10.	10.
32	COYOTE CREEK	U/S YERBA BUENA AVE	1324.00	13300.00	3500.00	11.	10.
33	COYOTE CREEK	ABOVE TRIMBLE RD.	755.00	12500.00	8600.00	11.	9.
34	LOWER PENITENCIA CREEK	PENITENICA ST.	78.00	1150.00	800.00	11.	9.
35	RUBY CREEK	U/S CONFL WITH FLINT CR	0.00	310.00	200.00	15.	7.
36	LOS COCHES CREEK	D/S TEMPLE DR.	51.00	1100.00	800.00	16.	6.
37	SOUTH BABB CREEK	D/S LOCHNER	26.00	890.00	570.00	17.	6.
38	COYOTE CREEK	U/S OF RICHMOND AVE	1910.00	11800.00	4670.00	19.	5.
39	BERRYESSA CREEK	U/S MORRIL AVE	232.50	2830.00	1590.00	20.	5.
40	COYOTE CREEK	U/S OF BURNETT AVE	2140.00	14800.00	4980.00	20.	5.
41	COYOTE CREEK	U/S FISHER CREEK	1735.00	14800.00	5000.00	20.	5.
42	FOWLER CREEK	U/S CONFL WITH THOMPSON	0.00	620.00	430.00	25.	4.
43	LOWER PENITENCIA CREEK	U/S BERRYESSA CR	47.00	1150.00	1000.00	30.	3.
44	LOWER PENITENCIA CREEK	U/S REDWOOD AVE	68.00	1150.00	1000.00	30.	3.
45	COYOTE CREEK	D/S FISHER CREEK	1734.80	14900.00	9000.00	32.	3.
46	COYOTE CREEK	D/S OF OGIER RD	1980.00	9740.00	7500.00	33.	3.
47	COYOTE CREEK	OPPOSITE MADRONE AVE	2075.00	9740.00	7500.00	33.	3.
48	COYOTE CREEK	U/S OLD OAKLAND RD.	830.00	12300.00	11800.00	34.	3.

IP04S1 - MAINTENANCE

This program has four job options:

1. analysis of channel capacity vs. roughness coefficient and sediment depth.
2. summary of existing channel capacities and environmental conditions
3. analysis of economic benefits of intensive maintenance
4. rank channel reaches by potential reduction in average annual damages or reduction in depth which could be achieved by channel maintenance.

The execution deck is set up as follows:

CARD 1	Execution Card
CARD 2	Time Card
CARD 3	Data Card
CARD 4	Title Card

Column	Variable	Format	Description
1-72	TITLE	12A6	e.g. East Zone

CARD 5 Job Card

Column	Variable	Format	Description
8	JOB	I1	Enter 1 for channel capacity vs. roughness coefficient and sediment depth. Enter 2 for summary of existing channel capacity and environmental conditions.

			Enter 3 for analysis of economic benefits of intensive maintenance. Enter 4 for maintenance ranking.
15-16	IDEBUG	I2	Enter 0 if no debugging output is to be written during execution. Enter a digit from 1 to 10 to have debugging statements written during execution. Level 1 will trace entrance and exit from subroutines; Level 10 will give maximum debugging aid.
24	MASTYP	I1	Enter 0 if the permanent master file will be used. Enter 1 if the alternate master file will be used.
32	IZN	I1	Enter number of zone (1-5) for maintenance ranking option.
40	ISUP	I1	Enter 0 if station by station summary of existing channel conditions and maintenance data is not wanted. Enter 1 if this summary is desired.
48	DESCRIP	I1	Enter 0 for program description. Enter 1 if no description is wanted.

56	ISUM	I1	Enter 0 for a condensed summary. Enter 1 if no condensed summary is desired.

IF JOB = 1-3, Follow with creek cards.

CARD 6, 7, etc. Creek Cards

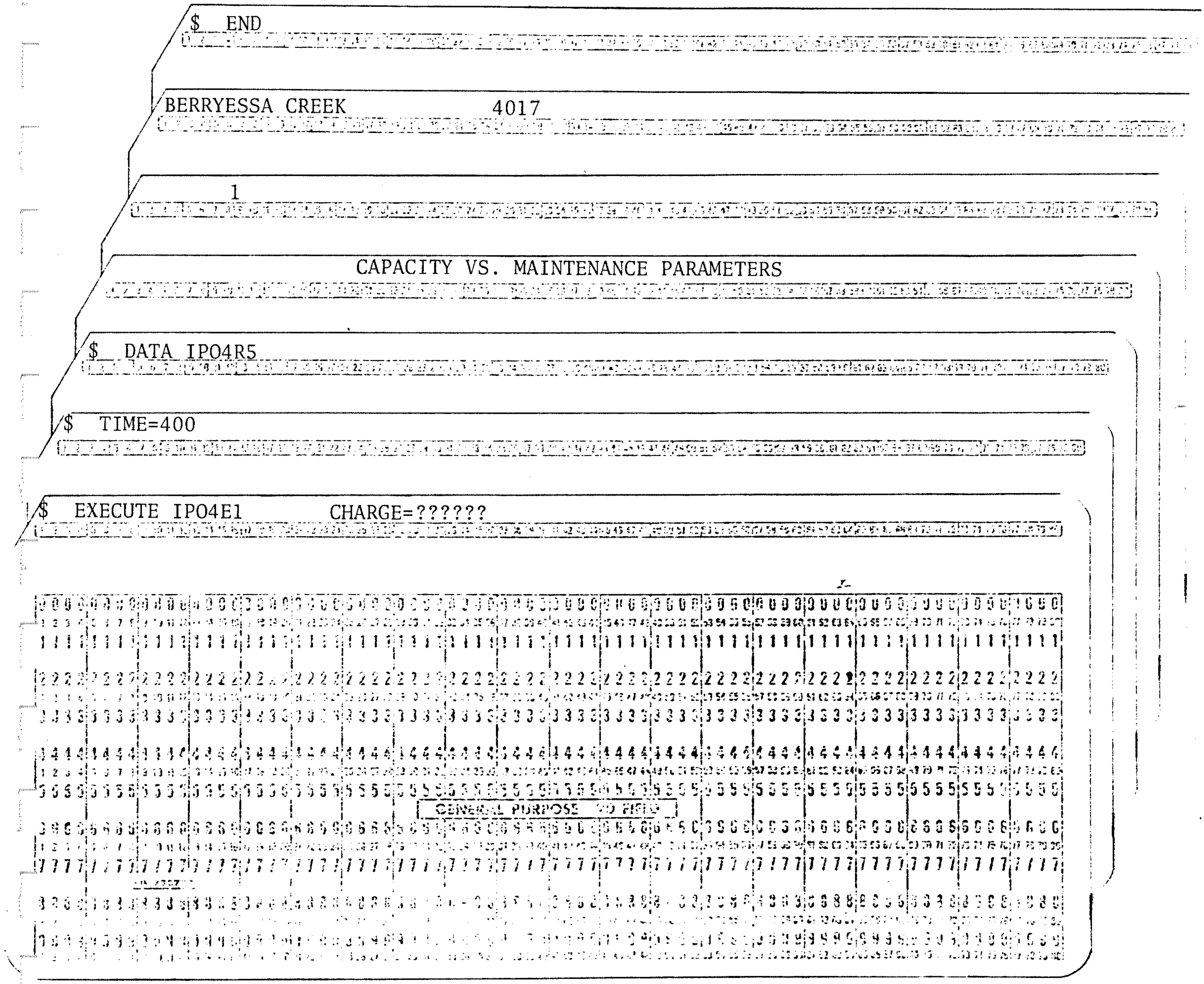
Column	Variable	Format	Description
1-24	CREEK	4A6	Name of creek
29-32	NCRKM	I4	Number of creek (reference Table 3)

LAST CARD End Card

EXAMPLE 4A

Channel Capacity vs Roughness and Sediment

(Job Option 1)



```
$  END
BERRYESSA CREEK              4017
       1
                          CAPACITY VS. MAINTENANCE PARAMETERS
$  DATA IP04R5
$  TIME=400
$  EXECUTE IP04E1        CHARGE=??????
```

GENERAL PURPOSE

6/14/82

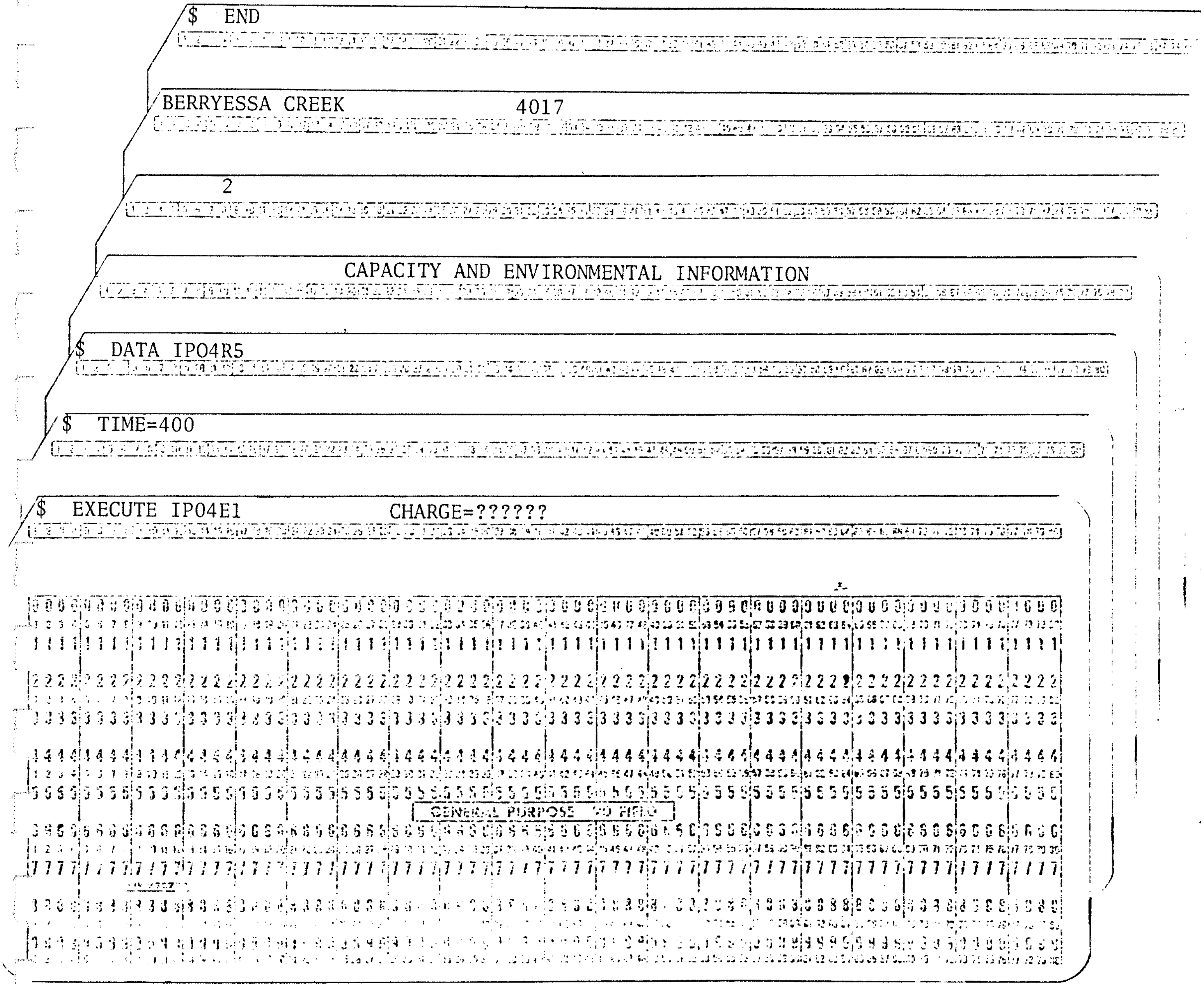
MAINTENANCE PROGRAM
CAPACITY VS, MAINTENANCE PARAMETERS

CREEK	STATION	ROUGHNESS COEFFICIENT MANNING'S N	SEDIMENT (FT)	CHANNEL CAPACITY (CFS)	REMAINING FREEBOARD (FT)	ESTIMATED FREQ, OF MAINTENANCE (YRS)
BERRYESSA CREEK L,PENITENCIA CONFL,	0,00	0,030	0	3914,	4,03	9,
		0,030	1	3670,	3,43	7,
		0,030	2	3398,	2,76	5,
		0,035	0	3355,	2,93	5,
		0,035	1	3145,	2,35	3,
		0,035	2	2913,	1,68	2,
		0,040	0	2935,	1,90	2,
		0,040	1	2752,	1,32	1,
		0,040	2	2549,	0,66	1,
		0,045	0	2609,	0,92	1,
		0,045	1	2446,	0,35	1,
		0,045	2	2265,	CHANNEL CAPACITY IS LESS THAN EXISTING Q1%	
		0,050	0	2348,	CHANNEL CAPACITY IS LESS THAN EXISTING Q1%	
		0,050	1	2202,	CHANNEL CAPACITY IS LESS THAN EXISTING Q1%	
		0,050	2	2039,	CHANNEL CAPACITY IS LESS THAN EXISTING Q1%	
BERRYESSA CREEK UPSTREAM OF CALERA	15,00	0,030	0	7385,	6,90	15,
		0,030	1	6924,	6,25	13,
		0,030	2	6412,	5,54	11,
		0,035	0	6330,	6,08	14,
		0,035	1	5935,	5,45	12,
		0,035	2	5496,	4,75	10,
		0,040	0	5538,	5,30	12,
		0,040	1	5193,	4,68	10,
		0,040	2	4809,	4,00	8,
		0,045	0	4923,	4,56	10,
		0,045	1	4616,	3,96	8,
		0,045	2	4275,	3,28	6,

EXAMPLE 4B

Channel Capacity and Environmental Conditons

(Job Option 2)



```
$  END
BERRYESSA CREEK                4017
        2
                         CAPACITY AND ENVIRONMENTAL INFORMATION
$  DATA IP04R5
$  TIME=400
$  EXECUTE IP04E1               CHARGE=??????
```

6/14/82

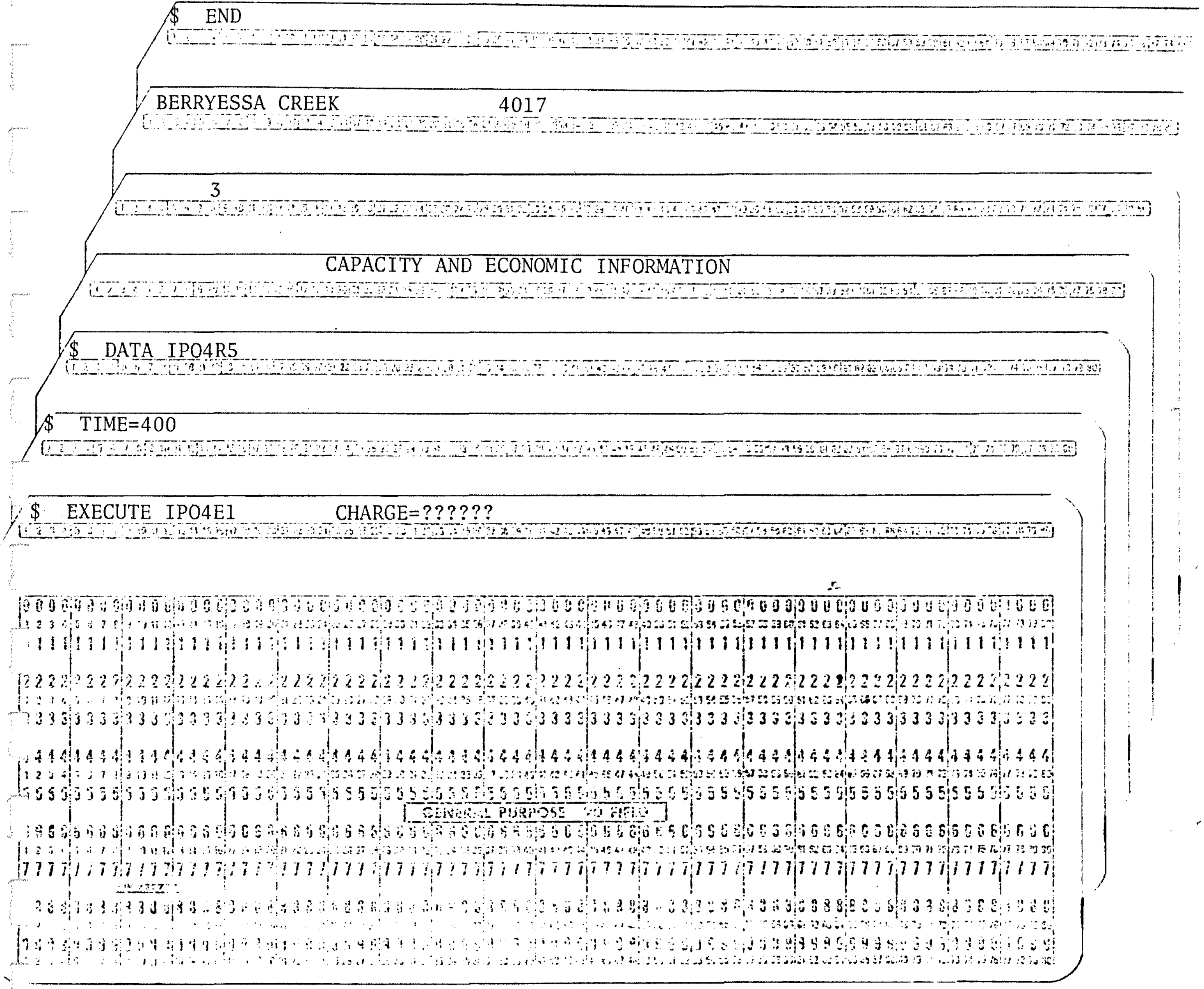
MAINTENANCE PROGRAM
EXISTING MAINTENANCE AND ENVIRONMENTAL CONDITIONS

CREEK	STATION	EXISTING CHANNEL CONDITIONS ROUGHNESS COEFFIENCT (N VALUE)	EST. AVERAGE ANNUAL SEDIMENT (FT)	CHANNEL CAPACITY (CFS)	FREQ. OF FLOODING (YRS)	EXISTING ENVIRONMENT QUANTITY OF VEGETATION	HABITAT QUALITY
BERRYESSA CREEK L.PENITENCIA CONFL.	0.00	.035	-1.0	3050.	100.	MODERATE	MODERATE
BERRYESSA CREEK UPSTREAM OF CALERA	15.00	.035	-1.0	4330.	100.	MODERATE	MODERATE
BERRYESSA CREEK ABEL STREET	22.00	.020	-1.0	3920.	100.	MODERATE	MODERATE
BERRYESSA CREEK U/S OF ABEL STREET	29.00	.035	-1.0	3930.	100.	MODERATE	MODERATE
BERRYESSA CREEK D/S MILPTS BLVD	49.00	.035	-1.0	3930.	100.	MODERATE	MODERATE
BERRYESSA CREEK TULARCITOS CONFL.	76.00	.035	-1.0	4770.	147.	MODERATE	MODERATE
BERRYESSA CREEK CALAVERAS BLVD	86.00	.035	-1.0	3735.	100.	MODERATE	MODERATE
BERRYESSA CREEK U/S CALAVERAS	90.00	.035	-1.0	2360.	100.	SPARSE	LOW
BERRYESSA CREEK LOS COCHES CONFL	94.00	.035	-1.0	1660.	100.	SPARSE	LOW
BERRYESSA CREEK CONF W/PIEDMONT CRK	115.50	.035	-1.0	1860.	100.	NONE	VERY LOW
BERRYESSA CREEK YOSEMITE DR	125.00	.035	-1.0	1310.	100.	NONE	VERY LOW
BERRYESSA CREEK AMES AVE	138.00	.035	-1.0	1310.	100.	NONE	VERY LOW
BERRYESSA CREEK U/S OF AMES AVE	143.00	.030	-1.0	5130.	1000.	NONE	VERY LOW
BERRYESSA CREEK ALONG MILPITAS BLVD	151.00	.030	-1.0	5130.	1000.	NONE	VERY LOW
BERRYESSA CREEK R/R XING	162.00	.030	-1.0	5130.	1000.	NONE	VERY LOW

EXAMPLE 4C

Economic Benefits of Intensive Maintenance

(Job Option 3)



```
$   END
BERRYESSA CREEK              4017
        3
                   CAPACITY AND ECONOMIC INFORMATION
$   DATA IP04R5
$   TIME=400
$   EXECUTE IP04E1           CHARGE=??????
```

MAINTENANCE PROGRAM
EXISTING MAINTENANCE AND ENVIRONMENTAL CONDITIONS

		EXISTING CAPACITY (CFS)	EXISTING FREQ. OF FLOODING (YRS)	EXISTING AVG.ANNUAL DAMAGES ($1000)	MAX.CAPACITY WITH INTENSIVE MAINTENANCE (CFS)	FREQ.OF FLOODING WITH INTENSIVE MAINTENANCE (YRS)	AVG.ANNUAL FLOOD DAMAGE REDUCTION BENEFITS ($1000)
BERRYESSA CREEK L PENITENCIA CRK	0.00	3050.	100.	0.	3558.	100.	0.
BERRYESSA CREEK D/S CALERA CR	9.50	4330.	100.	0.	5052.	100.	0.
BERRYESSA CREEK U/S CALERA CREEK	10.00	4330.	100.	0.	5052.	100.	0.
BERRYESSA CREEK UPSTREAM OF CALERA	15.00	4330.	100.	0.	5052.	100.	0.
BERRYESSA CREEK D/S ABEL ST (DITCH)	22.00	3920.	100.	0.	6031.	498.	0.
BERRYESSA CREEK D/S DRAINAGE LAGOON	29.00	3930.	100.	0.	4585.	111.	0.
BERRYESSA CREEK D/S MILPTS BLVD	49.00	3930.	100.	0.	4585.	111.	0.
BERRYESSA CREEK D/S N MILPITAS BLV	50.00	3930.	100.	0.	4585.	111.	0.
BERRYESSA CREEK D/S TULARCITOS CREEK	76.00	4770.	147.	0.	5565.	474.	0.
BERRYESSA CREEK U/S TULARCITOS CONFL.	76.50	4770.	147.	0.	5565.	474.	0.
BERRYESSA CREEK U/S TULARCITOS CREEK	77.50	3740.	100.	0.	4363.	189.	0.
BERRYESSA CREEK CALAVERAS BLVD	86.00	3740.	100.	0.	10069.	1000.	0.
BERRYESSA CREEK D/S CALAVERAS BLVD	87.00	3740.	100.	0.	10069.	1000.	0.
BERRYESSA CREEK U/S CALAVERAS BLVD	88.00	3740.	100.	0.	10069.	1000.	0.
BERRYESSA CREEK U/S CALAVERAS BLVD	90.00	2360.	100.	0.	2753.	100.	0.

IF JOB = 4, follow with creek cards and appropriate data.

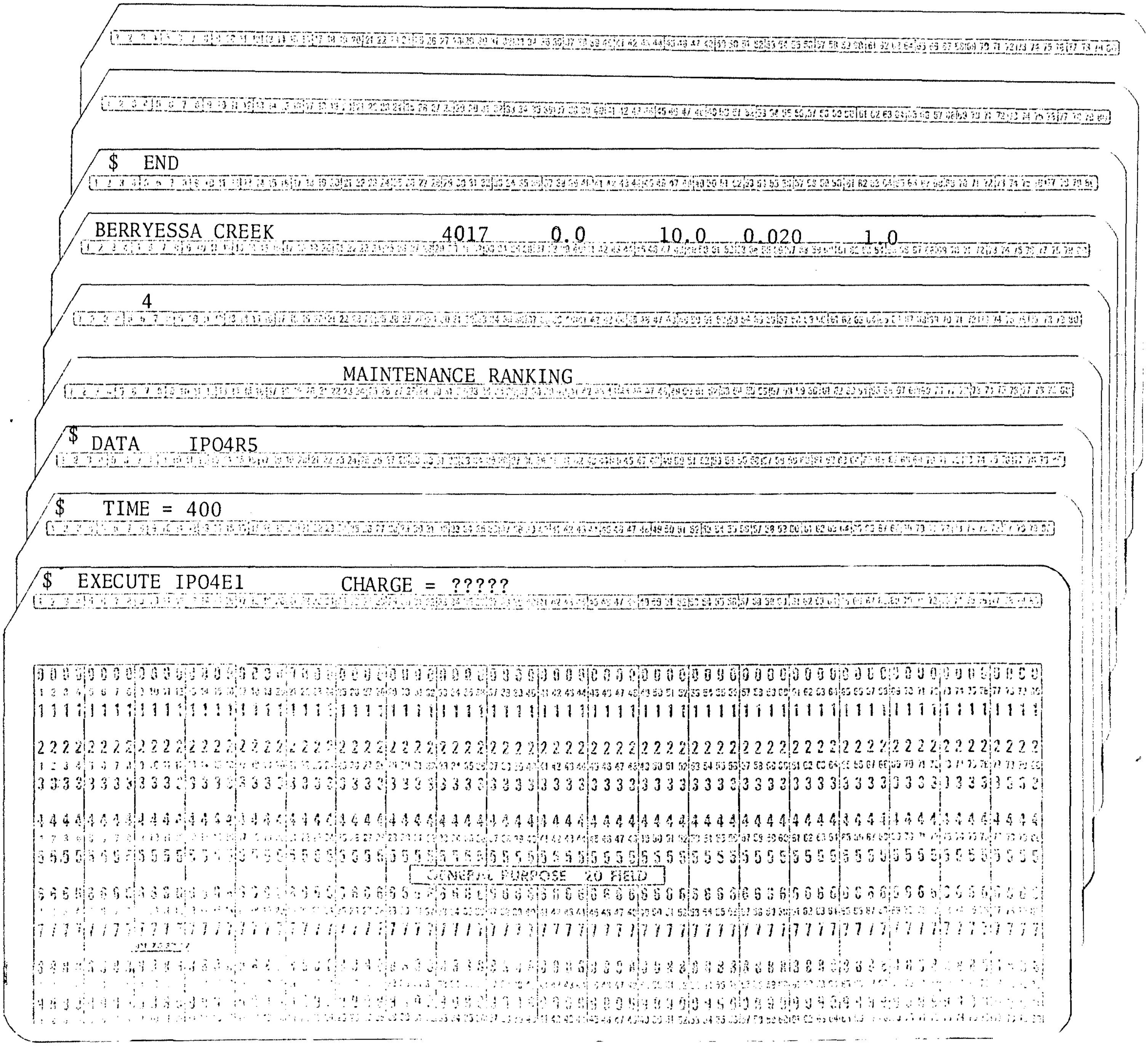
Card 6,7, etc. Creek cards.

Column	Variable	Format	Description
1-24	CREEK	4A6	Creek name.
29-32	NCRKM	I4	Number of creek (reference Table 3).
33-40	DSSTA	F8.2	Downstream station (FIA Station) of reach.
41-48	USSTA	F8.2	Upstream station of reach.
49-54	EXISTN	F6.3	Mannings roughness coefficient which represents the creeks present condition, (e.g., 0.045).
55-60	EXSED	F.51	Amount of sediment deposition in feet.
61-66	NMINUM	F5.3	Input minimum Manning's roughness coefficient (n) for n values different from standard values given in waterways planning study, Table 15. Leaving blank will invoke Table 15 n values.
67-72	DATE	A-6	Input field data collection date. (Example - JUN 84)

EXAMPLE 4D

Maintenance Ranking

(Job Option 4)


GENERAL PURPOSE 80 FIELD

```
$ EXECUTE IP04E1           CHARGE = ?????
$   TIME = 400
$ DATA     IP04R5
                                   MAINTENANCE RANKING
    4
BERRYESSA CREEK                       4017      0.0       10.0     0.020      1.0
$  END
```

*** GROUP 1 **

THESE IMPROVED REACHES ARE INADEQUATE FOR THE ONE PERCENT FLOOD AND HAVE DAMAGES ATTRIBUTED TO THEM.
RANKING IS BY DECREASING DAMAGE REDUCTION.

RANK	CREEK LOCATION	STATION LIMITS	MAINTENANCE STANDARD NMIN	 FLOOD FREQ (YR)	 FREEBOARD (FT)	EXISTING CONDITION DATE	 N	 FLOOD FREQ (YR)	 SED DEPTH (FT)	 FREEBOARD (FT)	AVG ANN DAMAGE REDUCT ($1000/MI)	CHANNEL TYPE @ 1ST STA, REACH DESCRIPTIONS
1.1	LOWER SILVER CREEK FROM TROPICAIRE DRIVEIN THRU U/S ALUM ROCK AVE RCB	80.00 102.00	.015	100	0.7	JUL 84	.024	1	0.4	-2.9	235.8	TRAPEZOIDAL CONCRETE IMPROVED REACH CHAN. CONSTANT BOX CULVERT(S)
1.2	BERRYESSA CREEK FROM U/S MONTAGUE EXPWY THRU U/S FWY 680	167.00 205.00	.015	2	-6.2	JUN 84	.040	2	0.0	-8.1	66.1	EXCAVATED EARTH IMPROVED REACH CHAN. NOT CONST.
1.3	BERRYESSA CREEK FROM U/S CALAVERAS BLVD THRU U/S MONTAGUE EXPWY	90.00 167.00	.015	100	1.1	JUN 84	.040	100	0.0	0.8	30.5	EXCAVATED EARTH IMPROVED REACH CHAN. CONSTANT BOX CULVERT(S)
1.4	BERRYESSA CREEK FROM U/S CROPLEY AVE THRU U/S SIERRA-END UFRAME	223.00 239.00	.015	100	1.4	JUN 84	.040	15	0.0	-0.0	13.3	EXCAVATED EARTH IMPROVED REACH CHAN. NOT CONST. BOX CULVERT(S)
1.5	LOWER SILVER CREEK FROM CAPITOL EXPWY RCB THRU U/S CUNNINGHAM AVE	155.00 246.00	.015	100	0.0	JUL 84	.035	3	0.2	-0.2	10.4	BOX CULVERT IMPROVED REACH CHAN. NOT CONST. BOX CULVERT(S)
1.6	LOS COCHES CREEK FROM D/S CARNEGIE DR. THRU D/S EVANS DR	33.00 63.50	.035	599	1.6	JUN 84	.019	170	0.0	1.0	9.2	TRAPEZOIDAL CONCRETE PART. IMPROVED CHAN. NOT CONST. BOX CULVERT(S)
1.7	LOWER PENITENCIA FROM U/S MARYLINN DR. THRU CALAVERAS BLVD.	90.00 113.50	.030	999	1.6	JUN 84	.035	753	0.3	1.0	0.8	FLOODWALLS IMPROVED REACH CHAN. NOT CONST. BOX CULVERT(S)

IP05S1 - ELEMENTS AND FUNDING

This program determines which elements of the District's flood damage reduction program and which funding sources are appropriate for reaches of creek.

The program contains two job options:

(1) screens flood control measures for each reach of creek

(2) screens funding sources for flood control measures selected for each reach of creek

The execution deck is set up as follows:

CARD 1	Execution Card
CARD 2	Time Card
CARD 3	Data Card
CARD 4	Title Card

Column	Variable	Format	Description
1-72	TITLE	12A6	e. g. Berryessa Creek

CARD 5 Job Card

Column	Variable	Format	Description
8	JOB	I2	Enter 1 if you want to do screening of flood control alternatives for creek reaches. Enter 2 if you want to do screening of funding sources for flood control measures selected for each reach of creek.

15-16	IDEBUG	I2	Enter 0 if no debugging output is to be written during execution. Enter a digit from 1 to 10 to have debugging statements written during execution. Level 1 will trace entrance and exit from subroutines; Level 10 will given maximum debugging aid.
24	MASTYP	I1	Enter 0 if the permanent master file will be used. Enter 1 if the alternate master file will be used.
25-32	INTRST	F8.0	Enter 0 for default value of 6%. Enter interest rate for present worth caluclation.

CARD 6, 7, etc. Creek Cards

Column	Variable	Format	Description
1-24	CREEK	4A6	Creek name
29-32	NCREEK	I4	Creek number (reference to Table 3)
33-40	BEGSTA	F8.0	Enter the downstream station beyond which the program will analyze flood control measures or funding sources. (optional for Job = 1)
41-48	ENDSTA	F8.0	Enter the upstream station beyond which the program will not analyze flood control measures or funding sources. (optional for Job = 1)
55-56	NREACH	I2	To specify flood control measures and costs for particular reaches of the creek, enter the number of

reaches you are dividing the creek into between BEGSTA and ENDSTA. Enter 0 if Job = 1.

Reach Cards (NOTE: These should not be included for Job = 1 but are required Job = 2).

Column	Variable	Format	Description
1-8	RCHBEG	F8.0	Enter the beginning station of the first reach between BEGSTA and ENDSTA.
9-16	RCHEND	F8.0	Enter the ending station of the first reach between BEGSTA and ENDSTA.
23-24	RCHELM	I2	Enter the number of the flood control element (Table 1) which has been chosen for this reach.
25-32	RCHCST	F8.0	Enter the total cost of the flood control element chosen for this reach, in thousands of dollars. If RCHCST is zero the program will calculate cost for elements 3, 5, 7, 8, 9, 10, 12, 13. But since these are very rough estimates, care should be exercised when allowing the program to calculate costs.

(Continue with as many Reach Cards as have been specified in NREACH. Reach Cards follow immediately after the Creek Card to which they apply.)

LAST CARD End Card

TABLE 1

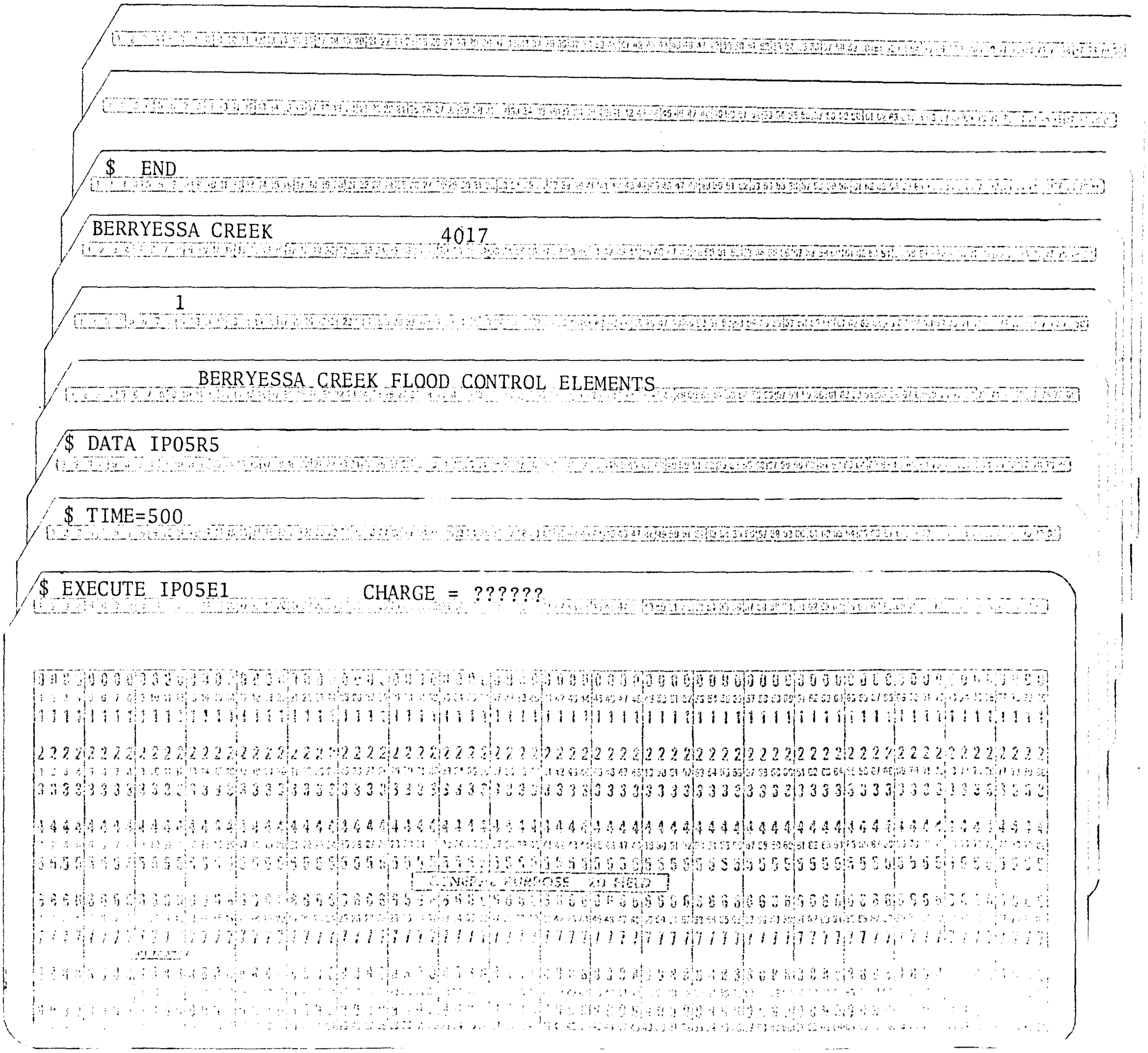
Flood Control Element Numbers

1. Regulation to prevent land use incompatible with floodplain
2. Discouragement of incompatible land use
3. Public acquisition of floodplain land
4. Removal of endangered structures
5. Floodproofing endangered structures
6. Construct floodwalls
7. Build levees/modified floodplain
8. Concrete line channels
9. Gabion/rock line channels
10. Earth line channels
11. Drop structures
12. Enlarge culvert
13. Construct bypass
14. Watershed treatment
15. Construct or raise dam/reservoir upstream
16. Install sediment basin
17. Flood emergency procedures/warning system
18. Flood insurance: Regulation and management

EXAMPLE 5A

Feasible Elements

(Job Option 1)



```
$ END
BERRYESSA CREEK                 4017
          1
              BERRYESSA CREEK FLOOD CONTROL ELEMENTS
$ DATA IP05R5
$ TIME=500
$ EXECUTE IP05E1               CHARGE = ??????
```

GENERAL PURPOSE 80 FIELD

```
            CREEK               FROM STATION  TO STATION                             FEASIBLE ELEMENTS

BERRYESSA CREEK                    226.60      232.00
U/S CROPLEY AVE

   CHANNEL TYPE(EXIST)=  EXCAVATED  EARTH
   1% DAMAGES         =           0.00  DOLLARS
   AREA DEVEL.        =           0.00  FLOODED ACRES
   AREA UNDEV.        =           0.00  FLOODED ACRES
   FREQUENCY OF FLOOD =         100.00  YEAR FLOOD
   CAPACITY IS LESS THAN THE DESIGN Q1%

                                                                 REGULATION TO PREVENT OCCURANCE OF PROBLEM
                                                                 DISCOURAGEMENT OF INAPPROPRIATE LAND USES
                                                                 PUBLIC ACQUISITION OF FULL FLOODPLAIN
                                                                 REMOVAL OF ENDANGERED STRUCTURES
                                                                 FLOODPROOFING OF STRUCTURES INFLOODPLAIN
                                                                 LEVEES AND/OR MODIFIED FLOODPLAIN
                                                                 CONSTRUCT CONCRETE LINED CHANNEL
                                                                 FLOOD INSURANCE: REGULATION + MANAGEMENT

                                                                           *****  WARNINGS  *****
                                                                 ELIMINATING FLOODING IN THIS REACH MAY
                                                                      INDUCE FLOODING IN A DOWNSTREAM REACH

BERRYESSA CREEK                    232.00      232.50
MORRIL BEGIN CON

   CHANNEL TYPE(EXIST)=  BOX CULVERT
   1% DAMAGES         =           0.00  DOLLARS
   AREA DEVEL.        =           0.00  FLOODED ACRES
   AREA UNDEV.        =           0.00  FLOODED ACRES
   FREQUENCY OF FLOOD =         100.00  YEAR FLOOD
   CAPACITY IS LESS THAN THE DESIGN Q1%

                                                                 REGULATION TO PREVENT OCCURANCE OF PROBLEM
                                                                 DISCOURAGEMENT OF INAPPROPRIATE LAND USES
                                                                 PUBLIC ACQUISITION OF FULL FLOODPLAIN
                                                                 REMOVAL OF ENDANGERED STRUCTURES
                                                                 FLOODPROOFING OF STRUCTURES INFLOODPLAIN
                                                                 ENLARGE CULVERT
                                                                 FLOOD INSURANCE: REGULATION + MANAGEMENT

                                                                           *****  WARNINGS  *****
                                                                 ELIMINATING FLOODING IN THIS REACH MAY
                                                                      INDUCE FLOODING IN A DOWNSTREAM REACH

BERRYESSA CREEK                    232.50      233.00
 U/S MORRIL AVE

   CHANNEL TYPE(EXIST)=  BOX CULVERT
   1% DAMAGES         =        5620.00  DOLLARS
   AREA DEVEL.        =          29.45  FLOODED ACRES
   AREA UNDEV.        =           1.90  FLOODED ACRES
   FREQUENCY OF FLOOD =          19.80  YEAR FLOOD
   CAPACITY IS LESS THAN THE DESIGN Q1%
   CAPACITY IS LESS THAN EXISTING1% FLOW RATE

                                                                 ENLARGE CULVERT
```

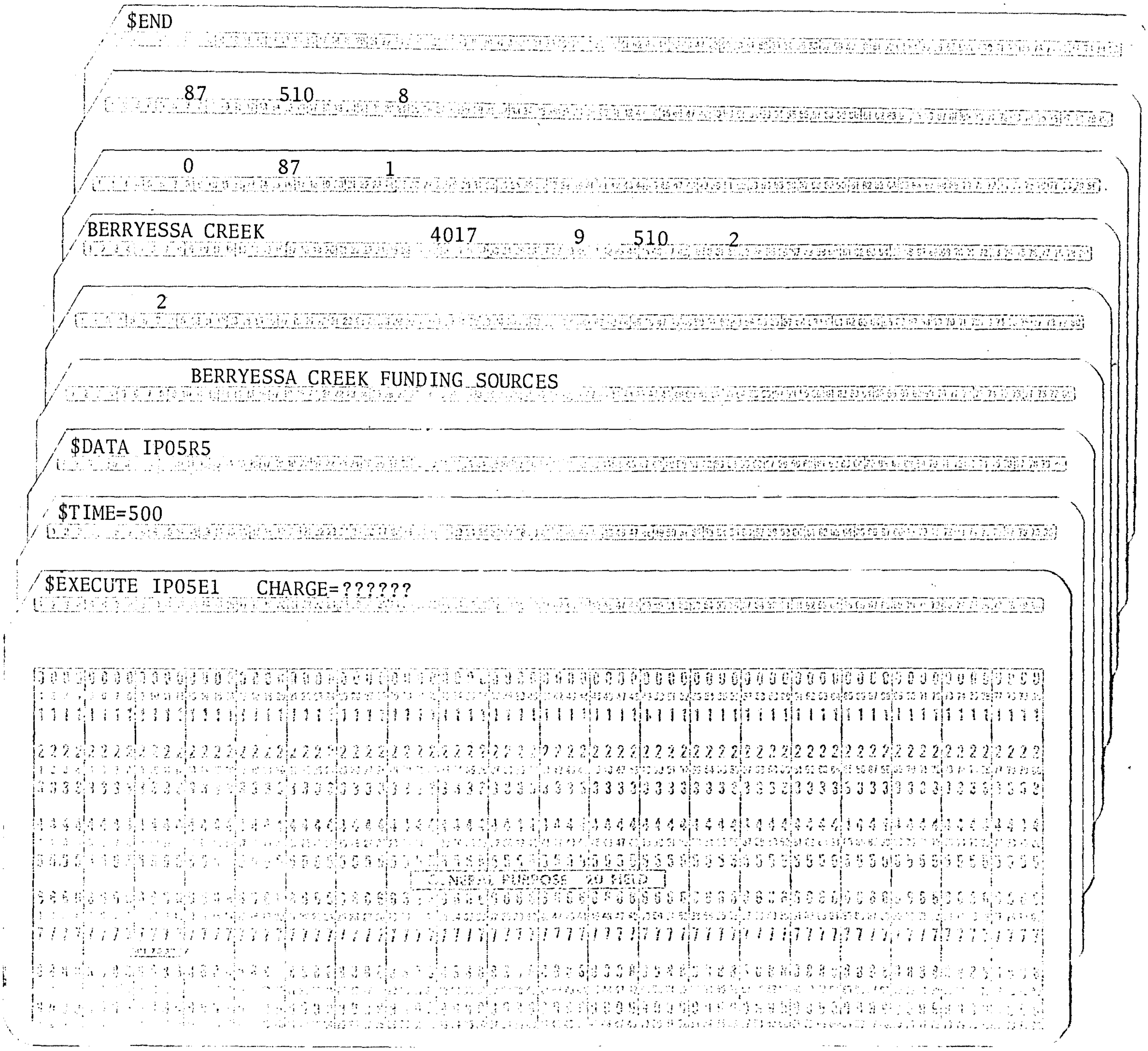
STATION	REGU-LATION	DIS-COURAGE-MENT	ACQUIRE WHOLE FLDPLN	REMOVAL OF STRUCT	FLOOD PROOF STRUCT	FLOOD-WALLS	LEVEES OR MODIFY FLDPLN	CONCRETE LINE CHANNEL	GABION OR ROCK	EARTH LINE CHANNEL	DROP STRUCT-URE	ENLARGE CULVERT
0.00	X	X										
9.50	X	X										
10.00	X	X										
15.00	X	X										
22.00	X	X										
29.00	X	X										
49.00	X	X										
50.00	X	X										
76.00	X	X										
76.50	X	X										
77.50	X	X										
87.00	X	X										
88.00	X	X										
90.00	X	X	X	X	X			X				
93.50	X	X	X	X	X		X	X				
94.00	X	X	X	X	X		X	X				
115.50	X	X	X	X	X		X	X				
116.00	X	X	X	X	X			X				
125.00	X	X	X	X	X		X	X				
138.00	X	X	X	X	X		X	X				
143.00	X	X	X	X	X		X	X				
151.00	X	X	X	X	X		X	X				
162.00	X	X	X	X	X		X	X				
166.00												X
167.00						X		X				
175.00												
178.00						X		X				
192.00	X	X										
200.00	X	X	X	X	X							
202.00	X	X	X	X	X							
205.00	X	X	X	X	X							
223.00	X	X	X	X	X		X	X				
225.50	X	X	X	X	X		X	X				
226.60	X	X	X	X	X		X	X				
232.00	X	X	X	X	X							X
232.50												X
233.00												X
234.00	X	X	X	X	X							X
234.50	X	X										
236.00	X	X										
239.00	X	X										
240.00	X	X										
252.00	X	X										
260.50	X	X										
270.00	X	X										
276.50	X	X										
285.00	X	X										
286.00	X	X										
288.00	X	X										
290.34	X	X										
291.00	X	X										
510.00												

```
SUMMARY OF THE TOTAL LENGTH OF CREEK FOR WHICH EACH OF OF THE ELEMENTS OF THE FLOOD DAMAGE REDUCTION PROGRAM IS FEASIBLE ON CREEK
                                                      BERRYESSA CREEK

               48250. FEET OF REGULATION TO PREVENT OCCURANCE OF PROBLEM
               48250. FEET OF DISCOURAGEMENT OF INAPPROPRIATE LAND USES
               10900. FEET OF PUBLIC ACQUISITION OF FULL FLOODPLAIN
               10900. FEET OF REMOVAL OF ENDANGERED STRUCTURES
               10900. FEET OF FLOODPROOFING OF STRUCTURES INFLOODPLAIN
                2200. FEET OF CONSTRUCT FLOODWALLS ALONG CREEK
                7250. FEET OF LEVEES AND/OR MODIFIED FLOODPLAIN
               10700. FEET OF CONSTRUCT CONCRETE LINED CHANNEL
                   0. FEET OF CONSTRUCT GABION OR ROCK LINED CHANNEL
                   0. FEET OF CONSTRUCT EARTH LINED CHANNEL
                   0. FEET OF INSTALL DROP STRUCTURE(S)
                 350. FEET OF ENLARGE CULVERT
                   0. FEET OF CONSTRUCT BYPASS
                   0. FEET OF WATERSHED TREATMENT
                2750. FEET OF BUILD DAM/RESERVOIR IN UPSTREAM REACH
                   0. FEET OF INSTALL SEDIMENT BASIN
                2750. FEET OF FLOOD EMERGENCY PROCEDURES/WARNING SYSTEM
               13650. FEET OF FLOOD INSURANCE; REGULATION + MANAGEMENT

                                  CONFLICTS BETWEEN POTENTIAL SOLUTIONS ON REACH

               51000. FEET OF ELIMINATING FLOODING IN THIS REACH MAY
                              INDUCE FLOODING IN A DOWNSTREAM REACH
                   0. FEET OF GROUNDWATER RECHARGE AND EROSION CONTROL N
                              EEDS CONFLICT
                   0. FEET OF HIGH ENVIRONMENTAL QUALITY; SIGNIFICANT
                              PROTECTION/MITIGATION MEASURES EXPECTED
               13650. FEET OF CAPACITY IS LESS THAN THE DESIGN Q1%
                              CAPACITY IS LESS THAN EXISTING1% FLOW RATE
                4950. FEET OF
```

EXAMPLE 5B

Feasible Funding Source

(Job Option 2)



```
$END
        87         510          8
         0         87          1
BERRYESSA CREEK                  4017          9     510        2
   2
             BERRYESSA CREEK FUNDING SOURCES
$DATA IP05R5
$TIME=500
$EXECUTE IP05E1    CHARGE=??????
```

```
                                        FEASIBLE FUNDING SOURCES FOR EACH STATION

               CREEK                FROM STATION   TO STATION                     FEASIBLE FUNDING SOURCES


  BERRYESSA CREEK                           0.00        87.00
  L PENITENCIA CRK

     ELEMENT =REGULATION TO PREVENT OCCURANCE OF PROBLEM
       COST FOR PROJECT    =          0.00  DOLLARS
       BENEFIT COST RATIO =           0.00
       PERCENT DEVELOPED   =          0.00  PERCENT OF TOTAL ACRES
                                                                         BENEFIT ASSESSMENT
                                                                         AD VALORUM TAXES
  BERRYESSA CREEK                          87.00       510.00
  D/S CALAVERAS BLVD

     ELEMENT =CONSTRUCT CONCRETE LINED CHANNEL
       COST FOR PROJECT    =   3000000.00  DOLLARS
       BENEFIT COST RATIO =           4.57
       PERCENT DEVELOPED   =          0.15  PERCENT OF TOTAL ACRES
                                                                         US-COE FLOOD FTG &REHAB. OF FLOOD CONT WKS
                                                                         US-SCS (PL566) - SMALL WATERSHED GRANTS
                                                                         US-COE (SEC205) SML FLOOD CNTRL PROJECTS
                                                                         STATE REIMBSMT OF LOCL SHARE OF FEDL PROJ
                                                                         URBAN PARKS & RECRN RECOVERY PROGRAM
                                                                         DEVELOPER CONSTRUCTED FACILITIES
                                                                         DRAINAGE FEES
                                                                         BENEFIT ASSESSMENT
                                                                         AD VALORUM TAXES
  BERRYESSA CREEK                      510.00                LIMIT OF DISTRICT'S JURISDICTION
```

```
SUMMARY OF THE TOTAL LENGTH OF CREEK FOR WHICH EACH OF OF THE FUNDINGS OF THE FLOOD DAMAGE REDUCTION PROGRAM IS FEASIBLE ON CREEK
                                                            BERRYESSA CREEK

      0. FEET OF US-SCS EMERGENCY WATERSHED PROTECTION
      0. FEET OF US-COE ENERGENCY BANK PROTECTION
      0. FEET OF US-COE PROTECT, CLEAR & STRAIGHTEN CHANNEL
      0. FEET OF US-FEDERAL EMERG. MANGT.AGCY. DISAST. ASST
      0. FEET OF STATE-DWR FLOOD FIGHTING
      0. FEET OF STATE-OFF. EMERG. SERV. NAT. DISAST. ASST.
  42300. FEET OF US-COE FLOOD FTG &REHAB. OF FLOOD CONT WKS
  42300. FEET OF US-SCS (PL566) - SMALL WATERSHED GRANTS
      0. FEET OF US-SCS RESOURCE CONS. & DEVLPMENT GRANTS
  42300. FEET OF US-COE (SEC205) SML FLOOD CNTRL PROJECTS
      0. FEET OF US-COE STANDARD FLOOD CONTROL PROJECT
      0. FEET OF US-COE SNAGGING & CLEARING
      0. FEET OF US-COE SMALL NAVIGATION PROJECT
      0. FEET OF US-BUREC SML RECLAMATION PROJECT
  42300. FEET OF STATE REIMBSMT OF LOCL SHARE OF FEDL PROJ
      0. FEET OF CITY OR COUNTY CAPITAL PROJECT FUNDS
      0. FEET OF US-HIGHWAY PROGRAM (THRU CALTRANS)
      0. FEET OF COMMUNITY REDEVELOPMENT FUNDS
      0. FEET OF COMMUNITY DEVELOPMENT BLOCK GRANTS
      0. FEET OF INDUSTRIAL DEVELOPMENT GRANTS
      0. FEET OF PUB WKS & DEVT FAC GRANTS & LOANS (EDA)
      0. FEET OF ECONOMIC DEVELOPMENT GRANTS (SEC-304)
      0. FEET OF LAND & WATER CONSERVATION FUND
      0. FEET OF US-DISPOSAL OF SURPLUS REAL PROPERTY
  42300. FEET OF URBAN PARKS & RECRN RECOVERY PROGRAM
  42300. FEET OF DEVELOPER CONSTRUCTED FACILITIES
      0. FEET OF SPECIAL BENEFIT ZONE
  42300. FEET OF DRAINAGE FEES
      0. FEET OF SPECIAL ASSESSMENT PROCEEDINGS
  51000. FEET OF BENEFIT ASSESSMENT
  51000. FEET OF AD VALORUM TAXES
```

IP06S1 - PRIORITY RANKING

This program performs priority ranking of flood control projects. Prepared data files for zones 1 thru 4 are stored as follows:

Zone	Date File
Northwest Zone	ENGDAT/IP06KN
North Central Zone	ENGDAT/IP06NC
Central Zone	ENGDAT/IP06KC
East Zone	ENGDAT/IP06KE

The execution deck is set up as follows:

CARD 1	Execution Card
CARD 2	Time Card
CARD 3	Data Card
CARD 4	Title Card

Column	Variable	Format	Description
1-72	TITLE	12A6	e.g. East Zone Priority Ranking

CARD 5 Printout Control Card

Column	Variable	Format	Description
1	MASTYP	I1	Enter 0 if the permanent master file will be used. Enter 1 if the alternate master file will be used.

8	IPRTY	I1	Enter 0 if definitions of terms are not to be printed and flood control priority ranking is not to be performed. Enter 1 if definitions of terms are to be printed and flood control priority ranking is to be done by zone advisory ranking criteria. Enter 2 if definitions of terms are to be printed and flood control priority ranking is to be done by B/C ratio.
16	INDSCR	I1	Enter 0 if no tables are to be printed. Enter 1 if you want the following intermediate ranking procedures tables to be printed: (1) performance indicator scores (2) indicator scores in consistent units (3) alternative-objectives matrix
17 - 24	INST	F8.3	Enter 0 if a default interest value 0.10 (10%) is to be used to calculate B/C ratio. Enter interest rate in decimal form to calculate the B/C ratio.
32	INVNT	I1	Enter 0 if no flood control inventory is to be printed. Enter 1 if you want flood control inventory to be printed.

40	IPRSTA	I1	Enter 0 if no summary of each reach by station is to be printed. Enter 1 if you want a summary of each reach by station to be printed.
48	DEBUG	I1	Enter 0 if no debugging output is to be written during execution. Enter a digit from 1 to 10 to have debugging statements written during execution. Level 10 will give maximum debugging aid.
56	DSCALC	I1	Enter 0 if you want the length of inadequate channel on downstream creeks to be read from data file IP06K2. Enter 1 if you want the length of inadequate channel on downstream creeks to be computed from data in the master file. This may be used to update IP06K2.
57-64	ENRB	F 7.0	Enter the base value of Engineering News Record construction cost index (San Francisco Bay area) corresponding to date when project costs were computed.
65-72	ENRCCI	F 7.0	Enter the current value of Engineering News Record construction cost index correspondg to date in the following 8 columns.

73-74	LD	I2	Enter the day corresponding to the values used to estimate project costs.
76-77	LM	I2	Enter the month corresponding to the values used to estimate project costs.
79-80	LY	I2	Enter the year corresponding to the values used to estimate project costs.

CARD 6, 7, etc. Creek Cards

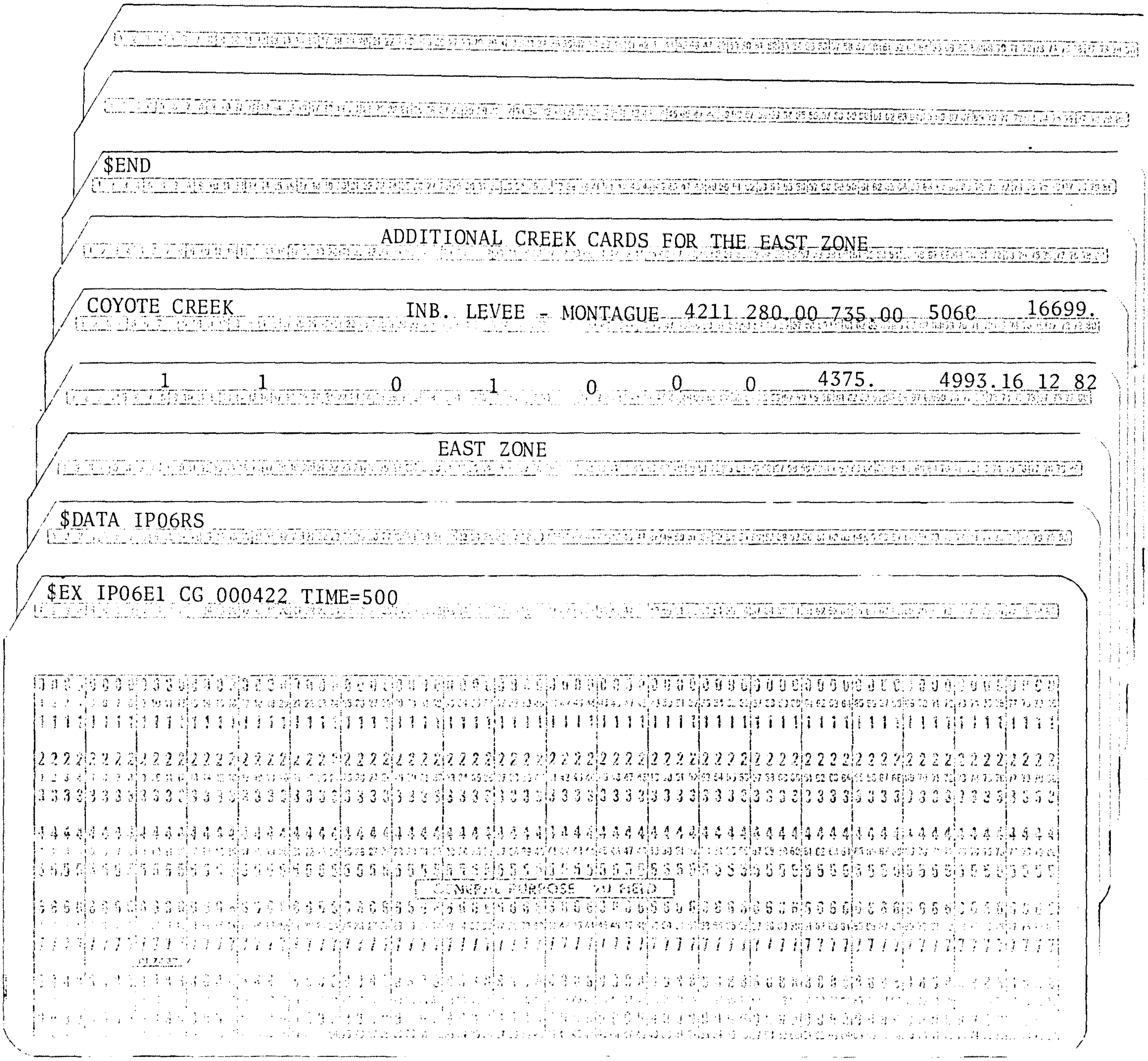
Column	Variable	Format	Description
1-24	NAME	4A6	Name of creek
25-48	REACH	4A6	Description of reach of creek
49-51	NCREEK	I3	Creek number. The zero is omitted. Eg. Coyote Creek, 4021, is written 421. (reference Table 3)
52	NNRCH	I1	Reach number
53-59	BEGSTA	F7.2	Enter station of downstream reach limit
60-66	ENDSTA	F7.2	Enter station of upstream reach limit
67-72	MAINT	F6.0	Enter maintenance cost in dollars per mile per year (in future this data will be read from files)

73-80	PRJCST	F8.0	Enter total project cost based on Engineering News Record base value, in thousands of dollars (in future this data will be read from files).

LAST CARD End Card

EXAMPLE 6A

Priority Ranking



```
$END
                              ADDITIONAL CREEK CARDS FOR THE EAST ZONE
COYOTE CREEK                  INB. LEVEE - MONTAGUE  4211 280.00 735.00  506C     16699.
        1      1       0       1      0      0     0     4375.      4993.16 12 82
                                 EAST ZONE
$DATA IP06RS
$EX IP06E1 CG 000422 TIME=500
```

GENERAL PURPOSE 80 FIELD

FLOOD CONTROL PRIORITY RANKING

RANK	CREEK REACH	FREQ OF FLOOD YEAR	1% FLOOD DAMAGES 1000$	AVG ANNUAL 1000$	DEVLPD AREA ACRES	US/DS 0-NO 1-YES	REHAB 0-NO 1-YES	PROPSD DEVLPM ACRES	D/S REACH MILES	MAINTN COSTS $/MLE	MULTI PURPSE MILES	INDEX	ACCUM PROJCT COST
PRIORITY ITEM NUMBER				#1	#2	#4	#5	#6	#7	#8	#9		
WEIGHTING FACTORS				50	12.6	9.2	6.3	6.1	5.9	5.9	4.0		
1	LOWER PENITENCIA CREEK BERRY CRK-SPENCE AVE	2.	15370.	1674.1	163.	0.	1.	260.	9.33	5120.	0.00	9.01	2796.
2	BERRYESSA CREEK YOSEMITE AVE-FWY 680	3.	27560.	1307.8	583.	0.	1.	351.	12.55	5120.	0.00	-1.00	0.
3	UPPER PENITENCIA CREEK FWY 680-DOREL DR	7.	23708.	893.8	1188.	0.	0.	1008.	19.18	0.	1.66	1.73	10561.
4	BERRYESSA CREEK CALAVERAS-YOSEMITE	2.	23865.	1100.8	383.	0.	0.	353.	11.88	5120.	0.00	-1.00	0.
5	LOWER SILVER CREEK MURTHA-CUNNINGHAM AVE	2.	10138.	468.0	877.	0.	1.	189.	20.98	5120.	0.00	30.85	10789.
6	COYOTE CREEK RTE 101-METCALF RD	54.	14995.	174.3	1114.	0.	0.	857.	25.20	0.	5.80	1.01	13374.
7	COYOTE CREEK INB.LEVEE-MONTAGUE EXPY	2.	11990.	445.3	159.	0.	1.	874.	8.45	0.	0.00	0.35	32432.
8	LOWER SILVER CREEK MCKEE RD-FWY 680	3.	7476.	350.0	235.	0.	1.	112.	18.12	5120.	1.20	23.07	32660.
9	COYOTE CREEK MONTAGUE EXPY-BAYSHORE	7.	8028.	235.0	302.	0.	1.	226.	13.92	5120.	2.81	0.54	39231.
10	LOWER SILVER CREEK FWY 680-MURTHA DR	2.	3986.	184.0	320.	0.	1.	57.	19.55	5120.	1.36	12.13	39459.
11	UPPER PENITENCIA CREEK COYOTE CRK-FWY 680	4.	5412.	242.3	173.	0.	0.	134.	17.13	0.	0.95	0.48	47091.
12	EAST PENITENCIA CREEK LOWER PEN CRK-TRIMBLE RD	2.	2581.	101.0	185.	0.	1.	167.	13.33	5120.	0.00	7.32	47298.
13	SOUTH BABB CREEK SILVER CRK-HDWTS	7.	1671.	51.8	507.	0.	0.	70.	24.08	5120.	0.00	0.37	49421.
14	COYOTE CREEK BAYSHORE-FWY 280	43.	5385.	73.7	304.	0.	0.	102.	17.87	0.	1.99	0.22	54482.
15	SIERRA CREEK BERRY CRK-PIEDMONT RD	2.	710.	27.8	296.	0.	1.	41.	22.96	5120.	0.00	-1.00	0.
16	COYOTE CREEK FWY 280-RTE 101	11.	159.	5.2	6.	0.	0.	105.	18.48	0.	6.72	0.02	57746.
17	COYOTE CREEK METCALF-ANDERSON DAM	19.	1747.	39.8	73.	0.	0.	987.	30.99	0.	0.00	0.13	62214.
18	MIGUELITA CREEK SILVER CRK-JACKSON AVE	2.	1251.	49.0	31.	0.	1.	0.	17.87	5120.	0.00	-1.00	0.
19	LOWER SILVER CREEK CUNNINGHAM-THOMPSON CRK	5.	24.	1.0	0.	0.	1.	252.	22.63	5120.	1.37	-1.00	0.
20	FISHER CREEK BAILEY AVE-TILTON AVE	3.	755.	34.4	31.	0.	0.	873.	33.26	0.	0.00	0.04	74316.
21	QUIMBY CREEK THOMPSON CRK-HDWTS	4.	545.	25.2	272.	0.	0.	360.	28.41	0.	0.00	0.10	78233.

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                                                       FLOOD CONTROL INVENTORY

                                                       ENR-CONST COST INDEX = 4993. AS OF DECEMBER  1982


                                   REACH     AS BUILTS     EXIST    DESIGN       MAINT   MULTI  PROJCT
        CREEK                      LENGTH  CONST  DESIGN   TOB    FLOWRATES     COSTS   PRPSE  COST
             REACH                 (MILES) DATE   Q(CFS)  CAPCTY    1%    10%  $MILE   MILES  1000$


4021COYOTE CREEK
    1INB.LEVEE-MONTAGUE EXPY        8.62     272      0.   2100. 14500.  8300.     0.    0.00  19058.
4021COYOTE CREEK
    2MONTAGUE EXPY-BAYSHORE         3.99     378      0.   7300. 14500.  8200.  5120.    2.81   6570.
4021COYOTE CREEK
    3BAYSHORE-FWY 280               2.07       0      0.  10000. 14500.  3800.     0.    1.99   5061.
4021COYOTE CREEK
    4FWY 280-RTE 101                6.72       0      0.   3500. 14500.  3300.     0.    6.72   3265.
4021COYOTE CREEK
    5RTE 101-METCALF RD             5.80       0      0.  11400. 15000.  4100.     0.    5.80   2585.
4021COYOTE CREEK
    6METCALF-ANDERSON DAM           8.52       0      0.   4670. 15000.  2300.     0.    0.00   4467.
4033LOWER PENITENCIA CREEK
    1COYOTE CRK-BERRYESSA CRK       0.86     855      0.   1400.  7000.  4000.  5120.    0.00   1739.
4033LOWER PENITENCIA CREEK
    2BERRY CRK-SPENCE AVE           1.30    1262      0.    800.  6700.  3900.  5120.    0.00   2796.
4033LOWER PENITENCIA CREEK
    3SPENCE AVE-MAIN ST             1.31    1262      0.    810.   810.   570.  5120.    0.00   1255.
4033LOWER PENITENCIA CREEK
    4MAIN ST-MONTAGUE EXPY          0.60      73      0.    810.   810.   570.  5120.    0.00     34.
4049EAST PENITENCIA CREEK
    1LOWER PEN CRK-TRIMBLE RD       0.98     773      0.    100.   340.   280.  5120.    0.00    208.
4017BERRYESSA CREEK
    1LOWER PEN CRK-WPRR             0.93     577      0.   3930.  4500.  2600.  5120.    0.00      0.
4017BERRYESSA CREEK
    2WPRR-CALAVERAS BLVD            0.78     577      0.   2360.  4000.  2300.  5120.    0.00      0.
4017BERRYESSA CREEK
    3CALAVERAS-YOSEMITE             0.66       0      0.    800.  3000.  1700.  5120.    0.00      0.
4017BERRYESSA CREEK
    4YOSEMITE AVE-FWY 680           1.42    1180      0.    720.  2600.  1400.  5120.    0.00      0.
4017BERRYESSA CREEK
    6FWY 680-SIERRA CREEK           0.68       0      0.   1590.  2400.  1200.  5120.    0.16      0.
4018CALERA CREEK
    1BERRYESSA CRK-HOWTS            2.94       0      0.    400.   890.   410.  5120.    0.00   2683.
4025LOS COCHES CREEK
    1BERRYESSA CRK-HOWTS            2.58     465      0.    800.  1400.   620.  5120.    0.00   1900.
4037SIERRA CREEK
    1BERRY CRK-PIEDMONT RD          1.84     667      0.    160.   330.   270.  5120.    0.00      0.
4032UPPER PENITENCIA CREEK
    1COYOTE CRK-FWY 680             1.99       0      0.    960.  4600.  1700.     0.    0.95   7632.
4032UPPER PENITENCIA CREEK
    2FWY 680-DOREL DR               1.75       0      0.   1350.  4600.  1700.     0.    1.66   7765.
4032UPPER PENITENCIA CREEK
    3DOREL DR-ARROYO AGUAGU         2.50       0      0.   3600.  4300.  1300.     0.    2.50      0.
4026LOWER SILVER CREEK
    1COYOTE CREEK-MCKEE RD          0.98    1056      0.   2220.  4700.  3000.  5120.    0.98    228.
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PERFORMANCE INDICATOR SCORES

PRIORITY ITEM NUMBER		#1	#2	#4	#5	#6	#7	#8	#9
CREEK	REACH	AVG ANNUAL	DEVLPD AREA	US/DS	REHAB	PROPSD DEVLPM	D/S REACH	MAINTN COSTS	MULTI PURPSE
COYOTE CREEK	INB.LEVEE-MONTAGUE EXPY	445.	159.	0.	1.	874.	8.45	0.	0.00
COYOTE CREEK	MONTAGUE EXPY-BAYSHORE	235.	302.	0.	1.	226.	13.92	5120.	2.81
COYOTE CREEK	BAYSHORE-FWY 280	74.	304.	0.	0.	102.	17.87	0.	1.99
COYOTE CREEK	FWY 280-RTE 101	5.	6.	0.	0.	105.	18.48	0.	6.72
COYOTE CREEK	RTE 101-METCALF RD	174.	1114.	0.	0.	857.	25.20	0.	5.80
COYOTE CREEK	METCALF-ANDERSON DAM	40.	73.	0.	0.	987.	30.99	0.	0.00
LOWER PENITENCIA CREEK	COYOTE CRK-BERRYESSA CRK	0.	1.	0.	1.	139.	8.45	5120.	0.00
LOWER PENITENCIA CREEK	BERRY CRK-SPENCE AVE	1674.	163.	0.	1.	260.	9.33	5120.	0.00
LOWER PENITENCIA CREEK	SPENCE AVE-MAIN ST	0.	0.	0.	0.	0.	10.60	5120.	0.00
LOWER PENITENCIA CREEK	MAIN ST-MONTAGUE EXPY	0.	0.	0.	0.	0.	10.89	5120.	0.00
EAST PENITENCIA CREEK	LOWER PEN CRK-THIMBLE RD	101.	185.	0.	1.	167.	13.33	5120.	0.00
BERRYESSA CREEK	LOWER PEN CRK-WPRR	0.	0.	0.	1.	0.	10.21	5120.	0.00
BERRYESSA CREEK	WPRR-CALAVERAS BLVD	0.	0.	0.	1.	0.	11.14	5120.	0.00
BERRYESSA CREEK	CALAVERAS-YOSEMITE	1101.	383.	0.	0.	353.	11.88	5120.	0.00
BERRYESSA CREEK	YOSEMITE AVE-FWY 680	1308.	583.	0.	1.	351.	12.55	5120.	0.00
BERRYESSA CREEK	FWY 680-SIERRA CREEK	20.	88.	0.	0.	6.	13.82	5120.	0.16
CALERA CREEK	BERRYESSA CRK-HDWTS	7.	91.	0.	0.	73.	11.06	5120.	0.00
LOS COCHES CREEK	BERRYESSA CRK-HDWTS	12.	46.	0.	1.	14.	15.46	5120.	0.00
SIERRA CREEK	BERRY CRK-PIEDMONT RD	28.	296.	0.	1.	41.	22.96	5120.	0.00
UPPER PENITENCIA CREEK	COYOTE CRK-FWY 680	242.	173.	0.	0.	134.	17.13	0.	0.95
UPPER PENITENCIA CREEK	FWY 680-DOREL DR	894.	1188.	0.	0.	1008.	19.18	0.	1.66
UPPER PENITENCIA CREEK	DOREL DR-ARROYO AGUAGU	0.	0.	0.	0.	0.	20.87	0.	2.50
LOWER SILVER CREEK	COYOTE CREEK-MCKEE RD	0.	0.	0.	1.	0.	17.67	5120.	0.98
LOWER SILVER CREEK	MCKEE RD-FWY 680	350.	235.	0.	1.	112.	18.12	5120.	1.20
LOWER SILVER CREEK	FWY 680-MURTHA DR	184.	320.	0.	1.	57.	19.55	5120.	1.36
LOWER SILVER CREEK	MURTHA-CUNNINGHAM AVE	468.	877.	0.	1.	189.	20.98	5120.	0.00
LOWER SILVER CREEK	CUNNINGHAM-THOMPSON CRK	1.	0.	0.	1.	252.	22.63	5120.	1.37
LOWER SILVER CREEK	THOMPSON CREEK-KING RD	0.	0.	0.	0.	0.	23.14	5120.	0.00
MIGUELITA CREEK	SILVER CRK-JACKSON AVE	49.	31.	0.	1.	0.	17.67	5120.	0.00
MIGUELITA CREEK	JACKSON-MT HAMILTON RD	0.	1.	0.	0.	1.	18.70	5120.	0.00
NORTH BABB CREEK	SILVER CRK-FLEMING AVE	-0.	0.	0.	0.	0.	22.65	5120.	0.00
SOUTH BABB CREEK	SILVER CRK-HDWTS	52.	507.	0.	0.	70.	24.08	5120.	0.00
FLINT CREEK	SILVER CRK-HDWTS	-0.	1.	0.	0.	1.	25.65	0.	0.00
RUBY CREEK	SILVER CRK-HDWTS	9.	181.	0.	0.	139.	25.65	0.	0.00
THOMPSON CREEK	SILVER CRK-ABORN RD	0.	0.	0.	0.	0.	28.41	5120.	0.00
THOMPSON CREEK	ABORN-EVERGREEN CANAL	0.	0.	0.	1.	0.	28.41	5120.	0.00
THOMPSON CREEK	EVERGREEN CANAL-HDWTS	0.	0.	0.	0.	0.	28.41	0.	0.00
NORWOOD CREEK	THOMPSON CRK-HDWTS	-0.	1.	0.	0.	1.	28.41	5120.	0.00
QUIMBY CREEK	THOMPSON CRK-HDWTS	25.	272.	0.	0.	360.	28.41	0.	0.00
FOWLER CREEK	THOMPSON CRK-HDWTS	3.	25.	0.	0.	344.	28.41	0.	0.00
EVERGREEN CREEK	THOMPSON CRK-HDWTS	0.	1.	0.	0.	40.	28.41	0.	0.00
CRIBARI CREEK	THOMPSON CRK-HDWTS	-0.	0.	0.	0.	0.	28.41	0.	0.00
UPPER SILVER CREEK	COYOTE CRK DIVERSION	0.	0.	0.	1.	2.	23.18	0.	0.00

EAST ZONE 2/ 9/83

ALTERNATIVE-OBJECTIVES MATRIX

PRIORITY ITEM NUMBER			#1	#2	#4	#5	#6	#7	#8	#9	
WEIGHTING FACTORS			50	12.6	9.2	6.3	6.1	5.9	5.9	4.0	
CREEK	REACH	DAMAG ADJST	AVG ANNUAL	DEVLPD AREA	US/DS	REHAB	PROPSD DEVLPM	D/S REACH	MAINTN COSTS	MULTI PURPSE	TOTAL
LOWER PENITENCIA CREEK	BERRY CRK-SPENCE AVE	1100.	1111.	27.	0.	35.	19.	-6.	22.	0.	2307.
BERRYESSA CREEK	YOSEMITE AVE-FWY 680	1100.	868.	96.	0.	35.	25.	-8.	22.	0.	2138.
UPPER PENITENCIA CREEK	FWY 680-DOREL DR	1000.	593.	196.	0.	0.	72.	-12.	0.	24.	1873.
BERRYESSA CREEK	CALAVERAS-YOSEMITE	1000.	730.	63.	0.	0.	25.	-8.	22.	0.	1833.
LOWER SILVER CREEK	MURTHA-CUNNINGHAM AVE	1000.	310.	145.	0.	35.	14.	-13.	22.	0.	1512.
COYOTE CREEK	RTE 101-METCALF RD	1000.	116.	184.	0.	0.	62.	-16.	0.	84.	1429.
COYOTE CREEK	INB,LEVEE-MONTAGUE EXPY	1000.	295.	26.	0.	35.	63.	-5.	0.	0.	1414.
LOWER SILVER CREEK	MCKEE RD-FWY 680	1000.	232.	39.	0.	35.	8.	-12.	22.	17.	1342.
COYOTE CREEK	MONTAGUE EXPY-BAYSHORE	1000.	156.	50.	0.	35.	16.	-9.	22.	41.	1311.
LOWER SILVER CREEK	FWY 680-MURTHA DR	1000.	122.	53.	0.	35.	4.	-12.	22.	20.	1243.
UPPER PENITENCIA CREEK	COYOTE CRK-FWY 680	1000.	161.	29.	0.	0.	10.	-11.	0.	14.	1202.
EAST PENITENCIA CREEK	LOWER PEN CRK-TRIMBLE RD	1000.	67.	31.	0.	35.	12.	-8.	22.	0.	1158.
SOUTH BABB CREEK	SILVER CRK-HDWTS	1000.	34.	84.	0.	0.	5.	-15.	22.	0.	1130.
COYOTE CREEK	BAYSHORE-FWY 280	1000.	49.	50.	0.	0.	7.	-11.	0.	29.	1124.
SIERRA CREEK	BERRY CRK-PIEDMONT RD	1000.	18.	49.	0.	35.	3.	-15.	22.	0.	1112.
COYOTE CREEK	FWY 280-RTE 101	1000.	3.	1.	0.	0.	8.	-12.	0.	98.	1098.
COYOTE CREEK	METCALF-ANDERSON DAM	1000.	26.	12.	0.	0.	71.	-20.	0.	0.	1090.
MIGUELITA CREEK	SILVER CRK-JACKSON AVE	1000.	32.	5.	0.	35.	0.	-11.	22.	0.	1083.
LOWER SILVER CREEK	CUNNINGHAM-THOMPSON CRK	1000.	1.	0.	0.	35.	18.	-14.	22.	20.	1081.
FISHER CREEK	BAILEY AVE-TILTON AVE	1000.	23.	5.	0.	0.	63.	-21.	0.	0.	1069.
QUIMBY CREEK	THOMPSON CRK-HDWTS	1000.	17.	45.	0.	0.	26.	-18.	0.	0.	1069.
LOS COCHES CREEK	BERRYESSA CRK-HDWTS	1000.	8.	8.	0.	35.	1.	-10.	22.	0.	1063.
LOWER PENITENCIA CREEK	COYOTE CRK-BERRYESSA CRK	1000.	0.	0.	0.	35.	10.	-5.	22.	0.	1062.
BERRYESSA CREEK	FWY 680-SIERRA CREEK	1000.	13.	15.	0.	0.	0.	-9.	22.	2.	1043.
CALERA CREEK	BERRYESSA CRK-HDWTS	1000.	4.	15.	0.	0.	5.	-7.	22.	0.	1039.
RUBY CREEK	SILVER CRK-HDWTS	1000.	6.	30.	0.	0.	10.	-16.	0.	0.	1030.
UPPER SILVER CREEK	COYOTE CRK DIVERSION	1000.	0.	0.	0.	35.	0.	-15.	0.	0.	1020.
FOWLER CREEK	THOMPSON CRK-HDWTS	1000.	2.	4.	0.	0.	25.	-18.	0.	0.	1013.
FISHER CREEK	COYOTE CREEK-BAILEY AVE	1000.	1.	0.	0.	0.	24.	-20.	0.	0.	1005.
UPPER SILVER CREEK	DIVERSION HDWTS	1000.	1.	0.	0.	0.	2.	-15.	0.	0.	988.
EVERGREEN CREEK	THOMPSON CRK-HDWTS	1000.	0.	0.	0.	0.	3.	-18.	0.	0.	985.
LOWER SILVER CREEK	COYOTE CREEK-MCKEE RD	0.	0.	0.	0.	35.	0.	-11.	22.	14.	60.
BERRYESSA CREEK	LOWER PEN CRK-WPRR	0.	0.	0.	0.	35.	0.	-6.	22.	0.	50.
BERRYESSA CREEK	WPRR-CALAVERAS BLVD	0.	0.	0.	0.	35.	0.	-7.	22.	0.	50.
THOMPSON CREEK	ABORN-EVERGREEN CANAL	0.	0.	0.	0.	35.	0.	-18.	22.	0.	39.
UPPER PENITENCIA CREEK	DOREL DR-ARROYO AGUAGU	0.	0.	0.	0.	0.	0.	-13.	0.	36.	23.
LOWER PENITENCIA CREEK	SPENCE AVE-MAIN ST	0.	0.	0.	0.	0.	0.	-7.	22.	0.	15.
LOWER PENITENCIA CREEK	MAIN ST-MONTAGUE EXPY	0.	0.	0.	0.	0.	0.	-7.	22.	0.	15.
MIGUELITA CREEK	JACKSON-MT HAMILTON RD	0.	0.	0.	0.	0.	0.	-12.	22.	0.	10.
NORTH BABB CREEK	SILVER CRK-FLEMING AVE	0.	-0.	0.	0.	0.	0.	-15.	22.	0.	7.
LOWER SILVER CREEK	THOMPSON CREEK-KING RD	0.	0.	0.	0.	0.	0.	-15.	22.	0.	7.
NORWOOD CREEK	THOMPSON CRK-HDWTS	0.	-0.	0.	0.	0.	0.	-18.	22.	0.	4.
THOMPSON CREEK	SILVER CRK-ABORN RD	0.	0.	0.	0.	0.	0.	-18.	22.	0.	4.

EAST ZONE

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INDICATOR SCORES IN CONSISTENT UNITS

PRIORITY ITEM NUMBER		#1	#2	#4	#5	#6	#7	#8	#9
CREEK	REACH	AVG ANNUAL	DEVLPD AREA	US/DS	REHAB	PROPSD DEVLPM	D/S REACH	MAINTN COSTS	MULTI PURPSE
COYOTE CREEK	INB.LEVEE-MONTAGUE EXPY	6.	2.	0.	6.	10.	1.	0.	0.
COYOTE CREEK	MONTAGUE EXPY-BAYSHORE	3.	4.	0.	6.	3.	1.	4.	10.
COYOTE CREEK	BAYSHORE-FWY 280	1.	4.	0.	0.	1.	2.	0.	7.
COYOTE CREEK	FWY 280-RTE 101	0.	0.	0.	0.	1.	2.	0.	24.
COYOTE CREEK	RTE 101-METCALF RD	2.	15.	0.	0.	10.	3.	0.	21.
COYOTE CREEK	METCALF-ANDERSON DAM	1.	1.	0.	0.	12.	3.	0.	0.
LOWER PENITENCIA CREEK	COYOTE CRK-BERRYESSA CRK	0.	0.	0.	6.	2.	1.	4.	0.
LOWER PENITENCIA CREEK	BERRY CRK-SPENCE AVE	22.	2.	0.	6.	3.	1.	4.	0.
LOWER PENITENCIA CREEK	SPENCE AVE-MAIN ST	0.	0.	0.	0.	0.	1.	4.	0.
LOWER PENITENCIA CREEK	MAIN ST-MONTAGUE EXPY	0.	0.	0.	0.	0.	1.	4.	0.
EAST PENITENCIA CREEK	LOWER PEN CRK-TRIMBLE RD	1.	2.	0.	6.	2.	1.	4.	0.
BERRYESSA CREEK	LOWER PEN CRK-WPRR	0.	0.	0.	6.	0.	1.	4.	0.
BERRYESSA CREEK	WPRR-CALAVERAS BLVD	0.	0.	0.	6.	0.	1.	4.	0.
BERRYESSA CREEK	CALAVERAS-YOSEMITE	15.	5.	0.	0.	4.	1.	4.	0.
BERRYESSA CREEK	YOSEMITE AVE-FWY 680	17.	8.	0.	6.	4.	1.	4.	0.
BERRYESSA CREEK	FWY 680-SIERRA CREEK	0.	1.	0.	0.	0.	1.	4.	1.
CALERA CREEK	BERRYESSA CRK-HDWTS	0.	1.	0.	0.	1.	1.	4.	0.
LOS COCHES CREEK	BERRYESSA CRK-HDWTS	0.	1.	0.	6.	0.	2.	4.	0.
SIERRA CREEK	BERRY CRK-PIEDMONT RD	0.	4.	0.	6.	0.	2.	4.	0.
UPPER PENITENCIA CREEK	COYOTE CRK-FWY 680	3.	2.	0.	0.	2.	2.	0.	3.
UPPER PENITENCIA CREEK	FWY 680-DOREL DR	12.	16.	0.	0.	12.	2.	0.	6.
UPPER PENITENCIA CREEK	DOREL DR-ARROYO AGUAGU	0.	0.	0.	0.	0.	2.	0.	9.
LOWER SILVER CREEK	COYOTE CREEK-MCKEE RD	0.	0.	0.	6.	0.	2.	4.	4.
LOWER SILVER CREEK	MCKEE RD-FWY 680	5.	3.	0.	6.	1.	2.	4.	4.
LOWER SILVER CREEK	FWY 680-MURTHA DR	2.	4.	0.	6.	1.	2.	4.	5.
LOWER SILVER CREEK	MURTHA-CUNNINGHAM AVE	6.	11.	0.	6.	2.	2.	4.	0.
LOWER SILVER CREEK	CUNNINGHAM-THOMPSON CRK	0.	0.	0.	6.	3.	2.	4.	5.
LOWER SILVER CREEK	THOMPSON CREEK-KING RD	0.	0.	0.	0.	0.	2.	4.	0.
MIGUELITA CREEK	SILVER CRK-JACKSON AVE	1.	0.	0.	6.	0.	2.	4.	0.
MIGUELITA CREEK	JACKSON-MT HAMILTON RD	0.	0.	0.	0.	0.	2.	4.	0.
NORTH HABB CREEK	SILVER CRK-FLEMING AVE	-0.	0.	0.	0.	0.	2.	4.	0.
SOUTH HABB CREEK	SILVER CRK-HDWTS	1.	7.	0.	0.	1.	3.	4.	0.
FLINT CREEK	SILVER CRK-HDWTS	-0.	0.	0.	0.	0.	3.	0.	0.
RUBY CREEK	SILVER CRK-HDWTS	0.	2.	0.	0.	2.	3.	0.	0.
THOMPSON CREEK	SILVER CRK-ABORN RD	0.	0.	0.	0.	0.	3.	4.	0.
THOMPSON CREEK	ABURN-EVERGREEN CANAL	0.	0.	0.	6.	0.	3.	4.	0.
THOMPSON CREEK	EVERGREEN CANAL-HDWTS	0.	0.	0.	0.	0.	3.	0.	0.
NORWOOD CREEK	THOMPSUN CRK-HDWTS	-0.	0.	0.	0.	0.	3.	4.	0.
QUIMBY CREEK	THOMPSON CRK-HDWTS	0.	4.	0.	0.	4.	3.	0.	0.
FOWLER CREEK	THOMPSON CRK-HDWTS	0.	0.	0.	0.	4.	3.	0.	0.
EVERGREEN CREEK	THOMPSON CRK-HDWTS	0.	0.	0.	0.	0.	3.	0.	0.
CRIMARI CREEK	THOMPSON CRK-HDWTS	-0.	0.	0.	0.	0.	3.	0.	0.
UPPER SILVER CREEK	COYOTE CRK DIVERSION	0.	0.	0.	6.	0.	2.	0.	0.

IP07S1 - MASTER FILE

This program controls input to the master file and allows users to get printed output or disk file output of records in the master file

The program has six job options:

(1) initializes zone directories (sets entire directory to zero)

(2) combines information from four intermediate output files (IP01K3, IP02K3, IP03K3, IP09K3) into the master file (zone directory is automatically rewritten each time the master file is rewritten). All HEC-II information is automatically stored in IP08K2 and following rewrite is automatically reinserted. This should be used only when each output file has been generated by IMASTR = 1 (all creeks are present). Password from Predesign is required to execute this option unless the alternate masterfile is being used.

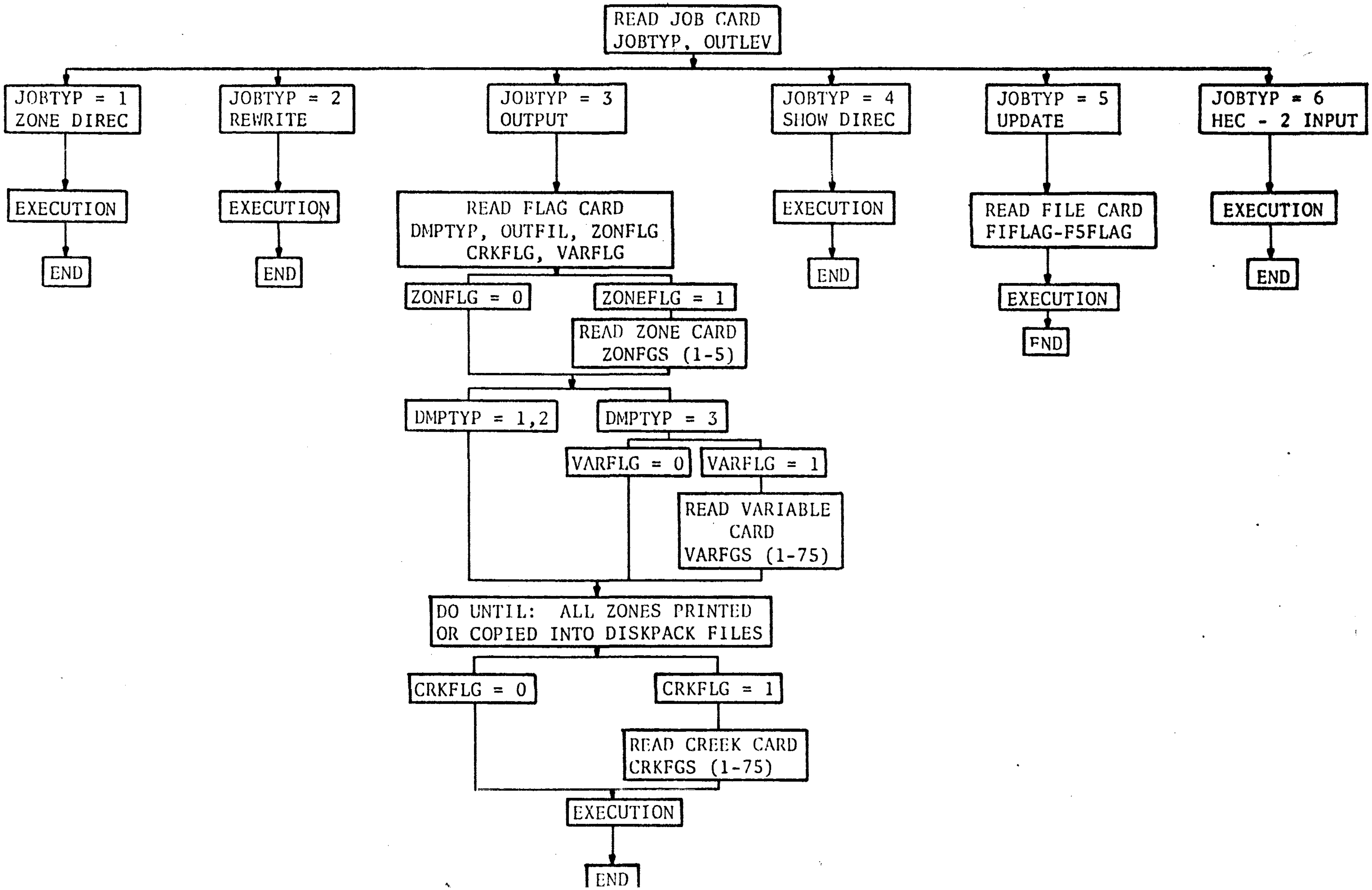
(3) copies out master file record information to either the printer, disk or alternate master file

(4) prints out master file directory information

(5) updates master file records directly without rewriting the entire master file. This job should be used when one file requires updating or when the file has been generated by IMASTR = 2 (not all creeks are present). Restrictions are; creeks and stations can not be added only existing data can be changed. Password required unless the alternate masterfile is being used.

(6) combines HEC II information from intermediate output file IP08K3 into existing master file records. Password is required unless the alternate masterfile is being used.

FIGURE 2 FLOW CHART
MASTER FILE CONTROL MODULE



The execution deck is set up as follows:

CARD 1	Execution Card
CARD 2	Time Card
CARD 3	Data Card
CARD 4	Job Card

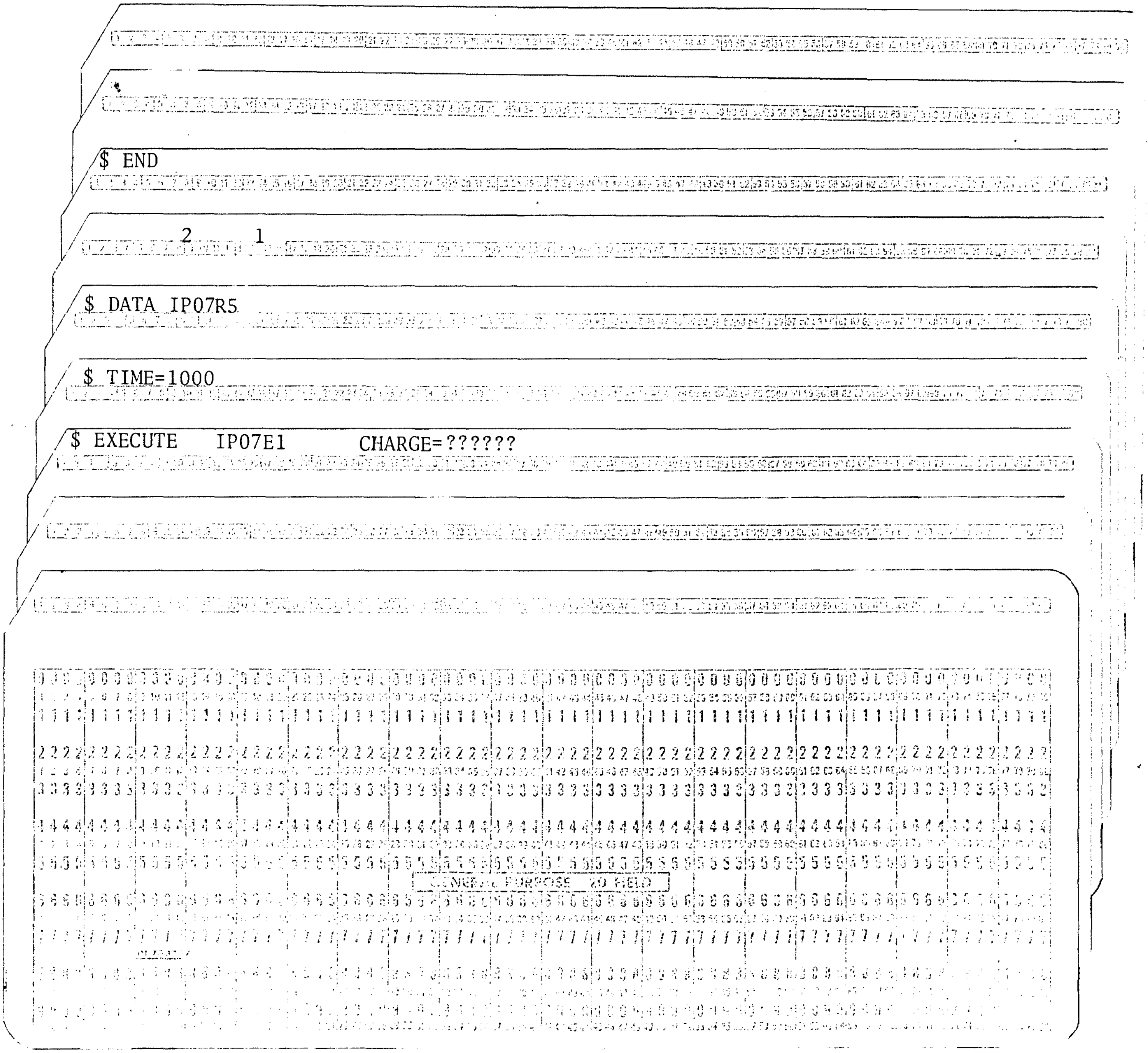
Column	Variable	Format	Description
8	JOBTYP	I8	Enter 1, 2, 3, 4, 5, or 6 according to what job option is required
15-16	OUTLEV	I8	Enter 0 if no debugging output is to be written during execution. Enter a digit from 1 to 10 to have debugging statements written during execution. Level 1 will trace entrance and exit from subroutines; Level 10 will give maximum debugging aid.
24	MASTYP	I1	Enter 0 if the permanent master file is of interest. This master file is managed by predesign so only permanent changes will be made. Enter 1 if the alternate master file will be used. This file is for temporary changes.
29-32	KPASS	I4	Enter Password for JOBTYP 2, 5 and 6 unless alternate master file is being used. See Predesign for password.

If JOBTYP=2, only job card is required.

EXAMPLE 7A

Rewrite Master File

(Job Option 2)



```
$ END
          2       1
$ DATA IP07R5
$ TIME=1000
$ EXECUTE     IP07E1          CHARGE=??????
```

```
                                          MASTER FILE CONTROL MODULE

DEDICATED FILE UNIT NUMBERS ARE AS FOLLOWS:
FILE1=  1  FILE2=  2  FILE3=  3  FILE4=  4  CRDFIL=  5  PRNFIL=  6  MSTRFL=  7  WORKFL=  8  MSGFL= 14
USER HAS REQUESTED THE OUTPUT LEVEL TO BE SET TO   1
JOB TYPE REQUESTED IS:  2


ENTERING SUB-MODULE COPY: LEVEL 7.1
ENTERING ZONE LOOP NUMBER 1
  ENTERING CREEK LOOP NUMBER 1
  ENTERING CREEK LOOP NUMBER 2
  ENTERING CREEK LOOP NUMBER 3
  ENTERING CREEK LOOP NUMBER 4
  ENTERING CREEK LOOP NUMBER 5
  ENTERING CREEK LOOP NUMBER 6
  ENTERING CREEK LOOP NUMBER 7
  ENTERING CREEK LOOP NUMBER 8
  ENTERING CREEK LOOP NUMBER 9
  ENTERING CREEK LOOP NUMBER10
  ENTERING CREEK LOOP NUMBER11
  ENTERING CREEK LOOP NUMBER12
  ENTERING CREEK LOOP NUMBER13
  ENTERING CREEK LOOP NUMBER14
  ENTERING CREEK LOOP NUMBER15
  ENTERING CREEK LOOP NUMBER16
  ENTERING CREEK LOOP NUMBER17
  ENTERING CREEK LOOP NUMBER18
  ENTERING CREEK LOOP NUMBER19
  ENTERING CREEK LOOP NUMBER20
  ENTERING CREEK LOOP NUMBER21
  ENTERING CREEK LOOP NUMBER22
  ENTERING CREEK LOOP NUMBER23
  ENTERING CREEK LOOP NUMBER24
  ENTERING CREEK LOOP NUMBER25
  ENTERING CREEK LOOP NUMBER26
  ENTERING CREEK LOOP NUMBER27
  ENTERING CREEK LOOP NUMBER28
  ENTERING CREEK LOOP NUMBER29
  ENTERING CREEK LOOP NUMBER30
  ENTERING CREEK LOOP NUMBER31
  ENTERING CREEK LOOP NUMBER32
  ENTERING CREEK LOOP NUMBER33
  ENTERING CREEK LOOP NUMBER34
  ENTERING CREEK LOOP NUMBER35
  ENTERING CREEK LOOP NUMBER36
  ENTERING CREEK LOOP NUMBER37
  ENTERING CREEK LOOP NUMBER38
  ENTERING CREEK LOOP NUMBER39
  ENTERING CREEK LOOP NUMBER40
  ENTERING CREEK LOOP NUMBER41
  ENTERING CREEK LOOP NUMBER42
  ENTERING CREEK LOOP NUMBER43
  ENTERING CREEK LOOP NUMBER44
  ENTERING CREEK LOOP NUMBER45
  ENTERING CREEK LOOP NUMBER46
  ENTERING CREEK LOOP NUMBER47
```

If JOBTYP=3, follow with cards which specify output.

CARD 5 Flag Card (NOTE: This card is not optional)

Column	Variable	Format	Description
8	DMPTYP	I8	Enter 1 if you want the master file to be copied to an alternate master file on disk pack. Enter 2 if you want master file records to be copied to the line printer. Enter 3 if you want master file data to be copied to formatted disk pack files (IP07KA, IP07KB, IP07KC, IP07KD).
15-16	OUTFIL	I8	Enter 0 if DMPTYP=1 or DMPTYP=2. Enter 9, 10, 11 or through 12 if DMPTYP=3. this variable controls what master file information will be printed to formatted disk pack files: 9 = Flood damages, insurance, etc. will be written to IP07KA (IP01K3 variables) 10 = Channel characteristics, etc. will be written to IP07KB (IP02K3 variables) 11 = Average annual damages, flood frequencies, etc. will be written to IP07KC variables) 12 = Environmental characteristics will be written to IP07KD (IP09K3 variables)

24	ZONFLG	I8	Enter 0 if all five zones are to be printed or copied disk pack files. Enter 1 if you want to specify one or more particular zones only to be printed or copied to disk pack files. An optional Zone Card must follow if ZONFLG = 1.
32	CRKFLG	I8	Enter 0 if all creeks are to be printed or copied to disk pack files. Enter 1 if you want to specify one or more particular creeks only to be printed or copied to disk files. If CRKFLG=1 there must be one optional Creek Card for each zone which will be printed or copied, in order from Zone 1 through Zone 5.
40	VARFLG	I8	Enter 0 if DMPTYP=1 or DMPTYP=2. Enter 1 if you want to specify one or more particular variables only to be copied to the formatted disk pack files. This variable is active only if DMPTYP=3.

CARD 6 Zone Card (NOTE: Only included if ZONFLG=1.)

Column	Variable	Format	Description
1	ZONFGS(1)	I1	Enter 0 if no data for Zone 1 is to be printed or copied.

			Enter 1 if data for Zone 1 is to be printed to copied to disk pack files.
2	ZONFGS(2)	I1	Enter 0 if no data for Zone 2 is to be printed or copied to disk pack files. Enter 1 if data for Zone 2 is to be printed or copied to disk pack files.
3	ZONFGS(3)	I1	Enter 0 if no data for Zone 3 is to be printed or copied to disk pack files. Enter 1 if data for Zone 3 is to be printed or copied to disk pack files.
4	ZONFGS(4)	I1	Enter 0 if no data for Zone 4 is to be printed or copied to disk pack files. Enter 1 if data for Zone 4 is to be printed or copied to disk pack files.
5	ZONFGS(5)	I1	Enter 0 if no data for Zone 5 is to be printed or copied to disk pack files. Enter 1 if data for Zone 5 is to be printed or copied to disk pack files.

CARD 7 Variable Card (NOTE: Only included if DMPTYP=3 and VARFLG=1.)

Column	Variable	Format	Description
1	VARFGS(1)	I1	Enter 0 if no data from OUTREC(1) is to be copied to the formatted disk pack file. (See description of the master file, IP00K1, to determine what variables are contained in each element of the OUTREC array.) Enter 1 if data from OUTREC(1) is to be copied to the formatted disk pack file.

(Repeat similarly for all columns 1 through 75.)

CARD 8, 9, etc. Creek Cards (NOTE: Only included if CRKFLG=1.)

Column	Variable	Format	Description
1	CRKFGS(1)	I1	Enter 0 if no data for creek ending in 01 is to be printed or copied to disk pack file. Enter 1 if data for creek ending in 01 is to be printed or copied to disk pack file.

(Repeat similarly for all columns 1 through 75.)

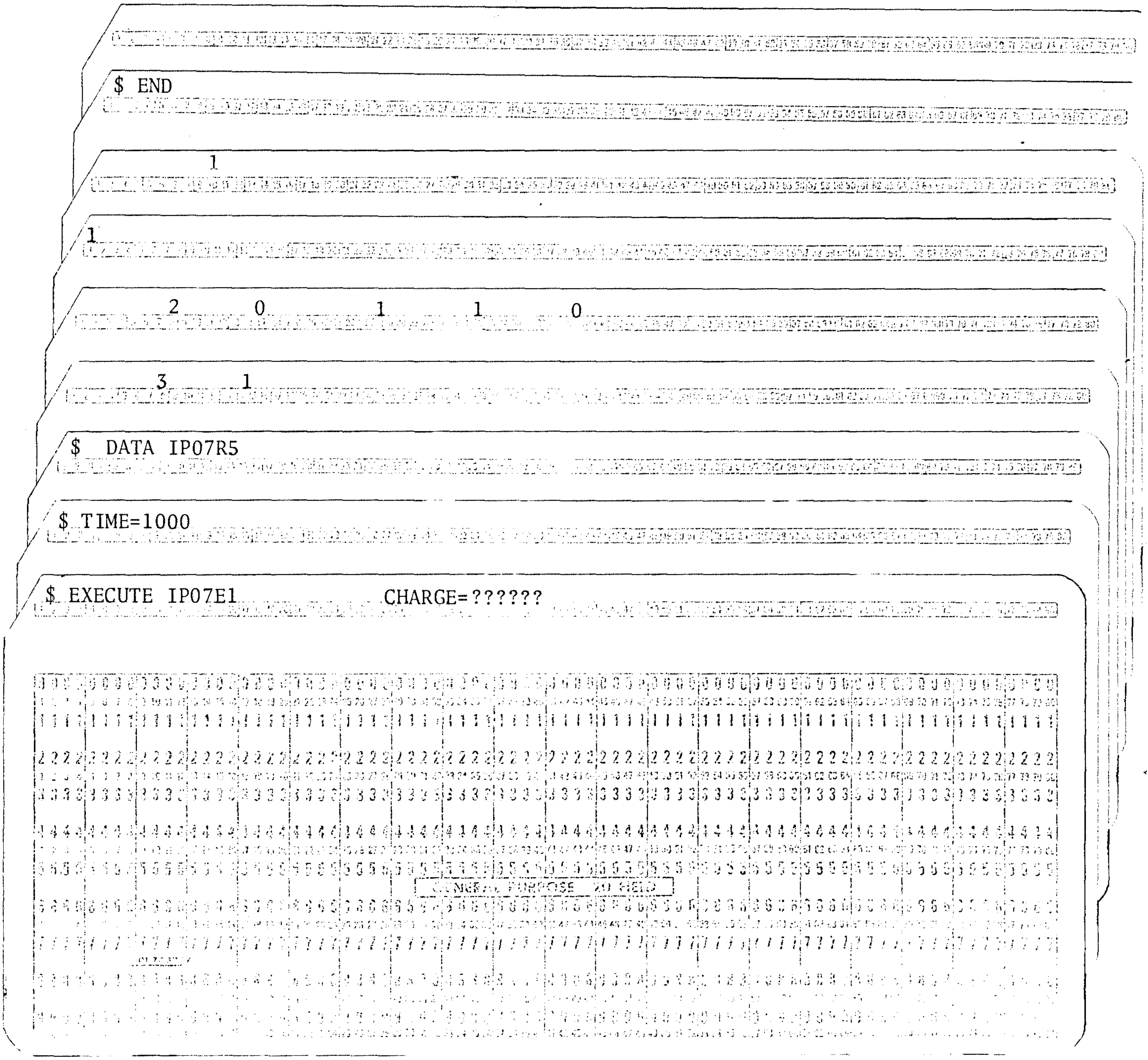
If CRKFLG=1 and ZONFLG=0, five Creek Cards must follow directly after the Variable Card if this is included, or directly after the Flag Card if the Variable Card is not included. The five Creek Cards apply to each of the five zones in order from 1 through 5. If CRKFLG=1 and ZONFLG=1, the sum of the Creek Cards following the Variable Card or the Flag Card must equal the sum of ZONFGS(i) on the Zone Card. For example, if you want only Zones 3 and 4, then two Creek Cards must follow the Zone Card, the first one applying to Zone 3 and the second apply to Zone 4.

LAST CARD End Card

EXAMPLE 7B

Master File Output

(Job Option 3)



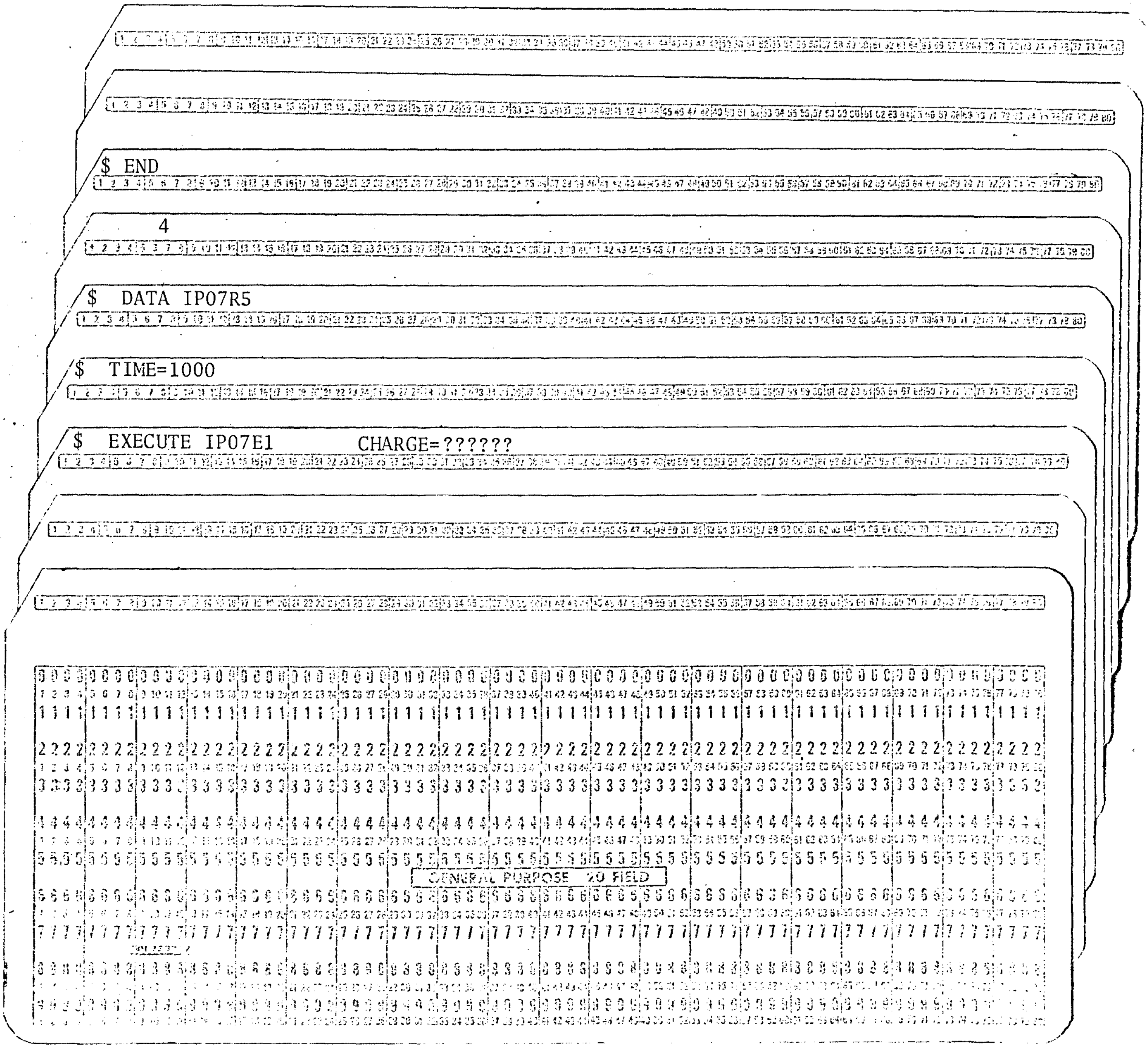
```
$ END
          1
1
      2      0         1       1       0
     3      1
$  DATA IP07R5
$ TIME=1000
$ EXECUTE IP07E1           CHARGE=??????
```

```
                         ** MASTER FILE OUTPUT OPTION **

      CREEK NUMBER=    1010

    STATION NUMBER=    0.00

    DATA AT THIS STATION FROM THE FOLLOWING SOURCES:
    SOURCE FILE 1
    SOURCE FILE 3

    STATION LOCATION: CONFL W/BAY FLOODGATE

                        FLOOD DAMAGE RELATED INFORMATION
      1% DAMAGES  INSURANCE  FLOODPROOF  FLOODPLAIN  FLOOD AREA    DEV AREA   UDEV AREA    IND AREA
        0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

                        FLOWRATES,FREQUENCY & AVERAGE ANNUAL DAMAGE DATA
      EXSTG 1% Q  EXISTING N  EX CAPACITY  1% DESIGN Q  10% DESIGN Q  DRAING AREA  FLOOD FREQ  AVG ANN DMGS
     1780.000       0.030    1780.000    3900.000    2300.000      13.900     100.000       0.000

    STATION NUMBER=  130.00

    DATA AT THIS STATION FROM THE FOLLOWING SOURCES:
    SOURCE FILE 1
    SOURCE FILE 3

    STATION LOCATION: CONFL W/BARRON

                        FLOOD DAMAGE RELATED INFORMATION
      1% DAMAGES  INSURANCE  FLOODPROOF  FLOODPLAIN  FLOOD AREA    DEV AREA   UDEV AREA    IND AREA
        0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

                        FLOWRATES,FREQUENCY & AVERAGE ANNUAL DAMAGE DATA
      EXSTG 1% Q  EXISTING N  EX CAPACITY  1% DESIGN Q  10% DESIGN Q  DRAING AREA  FLOOD FREQ  AVG ANN DMGS
     1780.000       0.030    1780.000    3900.000    2300.000      13.900     100.000       0.000

    STATION NUMBER=  132.00

    DATA AT THIS STATION FROM THE FOLLOWING SOURCES:
    SOURCE FILE 3

    STATION LOCATION: U/S 101

                        FLOWRATES,FREQUENCY & AVERAGE ANNUAL DAMAGE DATA
      EXSTG 1% Q  EXISTING N  EX CAPACITY  1% DESIGN Q  10% DESIGN Q  DRAING AREA  FLOOD FREQ  AVG ANN DMGS
     1350.000       0.025    1350.000    3100.000    1800.000      10.800     100.000       0.000
```

EXAMPLE 7C

Master File Directory

(Job Option 4)



```
$ END
      4
$  DATA IP07R5
$  TIME=1000
$  EXECUTE IP07E1          CHARGE=??????
```

```
USER HAS REQUESTED THE OUTPUT LEVEL TO BE SET TO    0
JOB TYPE REQUESTED IS:  4
************************************************************
*                                                          *
*           STATUS REPORT:  MASTER FILE DIRECTORY          *
*                                                          *
************************************************************



THE FOLLOWING CREEKS ARE RESIDENT IN THE MASTER FILE FOR ZONE:          1
CREEK NUMBER              STARTING RECORD            ENDING RECORD
   1010                          20                        42
   1011                          43                        47
   1012                          48                        59
   1016                          60                        75
   1017                          76                        79
   1020                          80                        82
   1021                          83                       106
   1023                         107                       115
   1024                         116                       145
   1028                         146                       177
   1029                         178                       200
   1034                         201                       205
   1037                         206                       208
   1038                         209                       218
   1039                         219                       220



THE FOLLOWING CREEKS ARE RESIDENT IN THE MASTER FILE FOR ZONE:          2
CREEK NUMBER              STARTING RECORD            ENDING RECORD
   2010                         221                       265
   2019                         266                       297
   2021                         298                       319
   2026                         320                       326
   2027                         327                       330
   2033                         331                       333



THE FOLLOWING CREEKS ARE RESIDENT IN THE MASTER FILE FOR ZONE:          3
CREEK NUMBER              STARTING RECORD            ENDING RECORD
   3010                         334                       346
   3011                         347                       375
   3012                         376                       383
   3013                         384                       386
   3014                         387                       389
   3015                         390                       439
   3017                         440                       442
   3019                         443                       444
   3020                         445                       475
   3023                         476                       495
```

If JOBTYP=5, follow with cards which specify which intermediate output file is to be updated in the master file.

CARD 5 File Card (NOTE: this card is not optional and only one file can be specified).

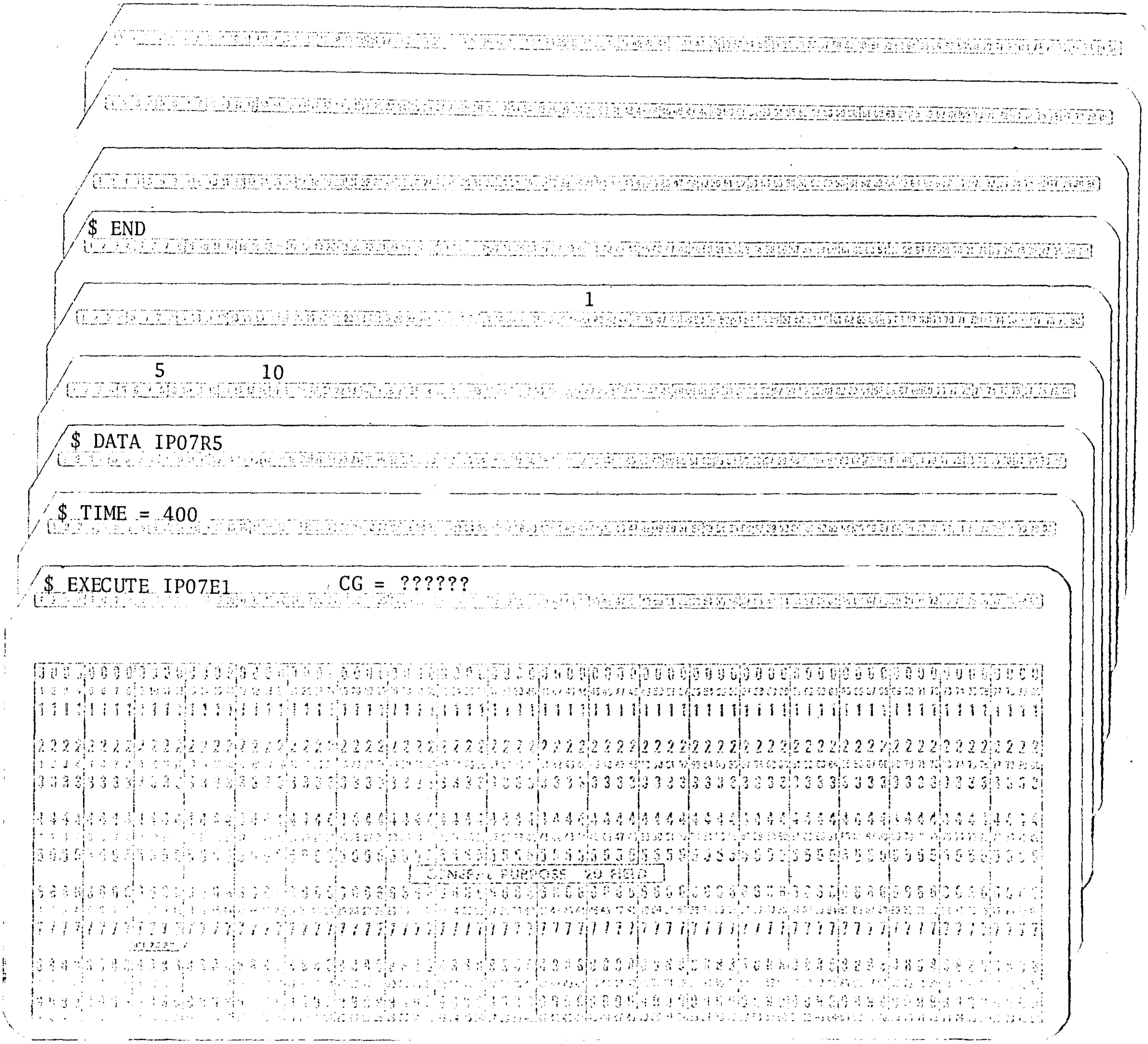
Column	Variable	Format	Description
8	F1FLAG	I1	Enter 0 if no data from IP01K3 is to be copied to the master file. Enter 1 if data from IP01K3 is to be copied to master file.
16	F2FLAG	I1	Enter 0 if no data from IP02K3 is to be copied to master file. Enter 1 if data from IP02K3 is to be copied to master file.
24	F3FLAG	I1	Enter 0 if no data from IP03K3 is to be copied to the master file. Enter 1 if data from IP03K3 is to be copied to the master file.
32	F4FLAG	I1	Enter 0 if no data from IP09K3 is to be copied to the master file. Enter 1 if data from IP09K3 is to be copied to the master file.

40	F5FLAG	I1	Enter 0 if no data from IP08K2 is to be copied to the master file. Enter 1 if data from IP08K2 is to be copied to the master file.

EXAMPLE 7D

Single File Update

(Job Option 5)



```
$ END
$ DATA IP07R5
$ TIME = 400
$ EXECUTE IP07E1           CG = ??????
```

```
                                        MASTER FILE CONTROL MODULE

DEDICATED FILE UNIT NUMBERS ARE AS FOLLOWS:
FILE1=  1  FILE2=  2  FILE3=  3  FILE4=  4  CRDFIL=  5  PRNFTL=  6  MSTRFL=  7  WORKFL=  8  MSGFL= 14
USER HAS REQUESTED THE OUTPUT LEVEL TO BE SET TO  10
JOB TYPE REQUESTED IS:  5
 ENTERING LEVEL 7.7
 F1 = 0F2 = 0F3 = 0F4 = 0F5 = 1
 CREEK NUMBER IN INTERMEDIATE FILE IS   3015  STA = 715.00
 IZONE =   3 SMALL CRKNO =  15 MASTERFL #= 7
    CREEK NUMBER FROM MASTERFILE IS  3015
    STARTING RECORD IS     851
    ENDING RECORD IS       900
 STARTING RECORD IS    851  ENDING RECORD IS     900
 FILE #16 STA =   0.00
 FILE #16 STA = 228.50
 FILE #16 STA = 264.00
 FILE #16 STA = 332.50
 FILE #16 STA = 389.50
 FILE #16 STA = 451.50
 FILE #16 STA = 479.00
 FILE #16 STA = 580.00
 FILE #16 STA = 588.00
 FILE #16 STA = 594.50
 FILE #16 STA = 615.00
 FILE #16 STA = 622.00
 FILE #16 STA = 623.50
 FILE #16 STA = 636.00
 FILE #16 STA = 643.00
 FILE #16 STA = 649.00
 FILE #16 STA = 663.50
 FILE #16 STA = 664.00
 FILE #16 STA = 669.00
 FILE #16 STA = 670.00
 FILE #16 STA = 680.00
 FILE #16 STA = 682.00
 FILE #16 STA = 690.00
 FILE #16 STA = 700.00
 FILE #16 STA = 715.00
 ****FINISHED FIRST MSTRFL WRITE LOOP****
 FILE #16 STA = 730.00
 ****FINISHED FIRST MSTRFL WRITE LOOP****
 FILE #16 STA = 736.00
 ****FINISHED FIRST MSTRFL WRITE LOOP****
 FILE #16 STA = 740.00
 ****FINISHED FIRST MSTRFL WRITE LOOP****
 FILE #16 STA = 748.00
 ****FINISHED FIRST MSTRFL WRITE LOOP****
 FILE #16 STA = 772.00
 ****FINISHED FIRST MSTRFL WRITE LOOP****
 FILE #16 STA = 774.00
 ****FINISHED FIRST MSTRFL WRITE LOOP****
 FILE #16 STA = 777.00
 ****FINISHED FIRST MSTRFL WRITE LOOP****
 FILE #16 STA = 780.00
 FILE #16 STA = 786.00
 ****FINISHED FIRST MSTRFL WRITE LOOP****
```

If JOBTYP = 6, follow with card which specifies which creek is to be written to the master file.

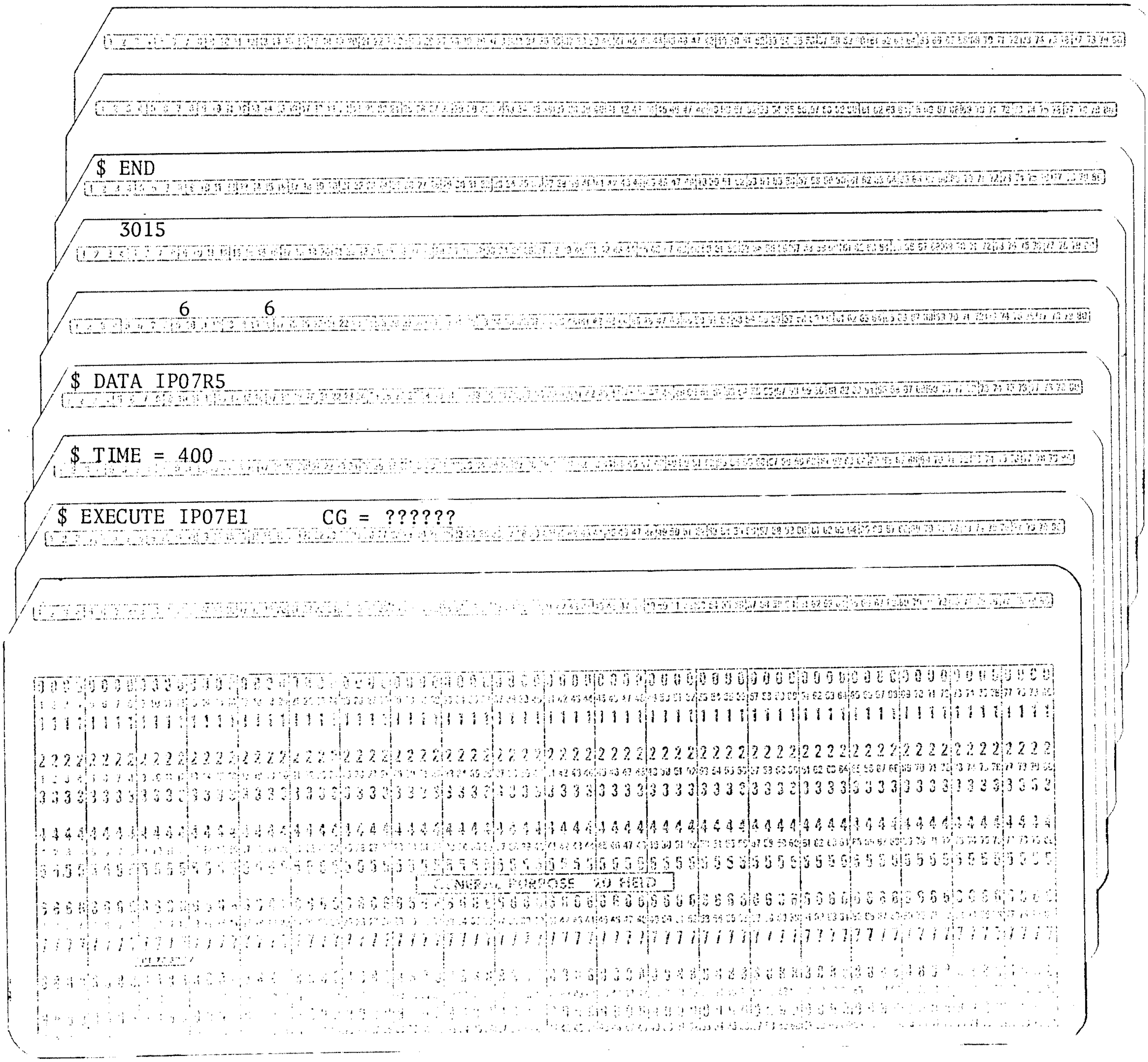
Creek Card (Note: this card is not optional and only one creek card for each run).

Column	Variable	Format	Description
5-8	ICREEK	I4	Enter number of creek being written from IP08K3 to the master file. (reference Table 3)

EXAMPLE 7E

Update HEC II

(Job Option 6)



```
$ END
  3015
         6         6
$ DATA IP07R5
$ TIME = 400
$ EXECUTE IP07E1        CG = ??????
```

```
                                    MASTER FILE CONTROL MODULE

DEDICATED FILE UNIT NUMBERS ARE AS FOLLOWS:
FILE1=  1  FILE2=  2  FILE3=  3  FILE4=  4  CRDFIL=  5  PRNFIL=  6  MSTRFL=  7  WORKFL=  8  MSGFL= 14
USER HAS REQUESTED THE OUTPUT LEVEL TO BE SET TO   6
JOB TYPE REQUESTED IS:  6


ENTERING HEC=2 ACCEPT SUB=MODULE; LEVEL 7.8
  TRANSFERRING CREEK NUMBER 3015
  ZONE= 3     SCRKNO=  15     IKEY=   8     CREEK NUMBER= 3015
    STREC= 851     ENREC= 900
  UPPER AND LOWER RECS =      6      5  FOR MSTRFL REC =   875
  UPPER AND LOWER RECS =     13     12  FOR MSTRFL REC =   876
  UPPER AND LOWER RECS =     14     13  FOR MSTRFL REC =   877
  UPPER AND LOWER RECS =     19     18  FOR MSTRFL REC =   878
  UPPER AND LOWER RECS =     21     20  FOR MSTRFL REC =   879
  UPPER AND LOWER RECS =     25     24  FOR MSTRFL REC =   880
  UPPER AND LOWER RECS =     28     27  FOR MSTRFL REC =   881
  UPPER AND LOWER RECS =     30     29  FOR MSTRFL REC =   882
  UPPER AND LOWER RECS =     35     34  FOR MSTRFL REC =   884
  UPPER AND LOWER RECS =     36     35  FOR MSTRFL REC =   885
  UPPER AND LOWER RECS =     41     40  FOR MSTRFL REC =   886
  UPPER AND LOWER RECS =     44     43  FOR MSTRFL REC =   887
  UPPER AND LOWER RECS =     49     48  FOR MSTRFL REC =   888
  UPPER AND LOWER RECS =     50     49  FOR MSTRFL REC =   889
  UPPER AND LOWER RECS =     56     55  FOR MSTRFL REC =   890
  UPPER AND LOWER RECS =     64     63  FOR MSTRFL REC =   891
  UPPER AND LOWER RECS =     65     64  FOR MSTRFL REC =   892

END OF FILE REACHED IN IP08K3


EXIT SUB=MODULE HEC=2 ACCEPT; LEVEL 7.8




END MASTER FILE CONTROL MODULE
```

IP08S0 HEC II

This program runs HEC II water surface profiles from data cards or data stored on disk pack files (IP08KA, IP08KB, IP08KC, IP08KD, IP08KE). Information can be printed out as normal HEC II output, or can be written to an intermediate output file (IP08K3) for transfer to the master file. Note: Files ENGDAT/IP08E1 and ENGDAT/1P08E2 contain HECII and HECII data editor as seperate programs.

The output generated by IP08S1 is dependent on the job control variables in the HEC II data. Refer to the HEC II User's Manual for further information. Modifications may be made to the HEC II data on disk pack files using the Data Editing On-Line text editor.

The execution deck is set up as follows:

CARD 1	Execution Card
CARD 2	Time Card
CARD 3	Data Card
CARD 4	Creek Control Card

Column	Variable	Format	Description
4	JOB	I1	Enter 1 if a normal HEC-II run is required. Enter 2 if Data Editor run is required.
5-8	CRKNO	I4	Enter creek number.

15-16	INPTYP	I2	Enter 0 if the data is on cards. Enter run number. HEC II runs in the directory are assigned run numbers to differentiate between separate runs on the same creek.
17-24	NOSTAS	I8	Enter number of stations which you want data to be transferred to the intermediate output file (IP08K3). (If NOSTAS is greater than or equal to one station cards must follow.) Enter 0 if data will not be written to the intermediate file for transfer to the master file. Enter -1 if data from all stations is to be transferred to the intermediate file.
31-32	OUTLEV	I2	Enter 0 if no debugging output is to be written during execution. Enter a digit from 1 to 10 to have debugging statements written during execution. Level 10 will give maximum debugging aid.
33-40	OUTFLG	I8	Enter 0 if you do not want to write to the intermediate output file (IP08K3). Normal HEC II output will be printed. Enter 1 if you want to write to the intermediate output file (IP08K3) for copying to the master file.

41-48	UPDATE	I8	Enter 0 to run HEC II without updating the HEC II directory. Enter 1 to run HEC II and update the HEC II directory. Enter 2 to update the directory only.
49-56	INFILE	I8	Enter directory file number (see Fig. 3) on which HEC II run is stored. Enter 5 if data is on cards.

CARD 5, 6, etc. Station Cards

Column	Variable	Format	Description
1-8	STATNS(1)	F8.0	Enter station number for which data is to be written to IP08K3.
9-16	STATNS(2)	F8.0	Same as above.
17-24	STATNS(3)	F8.0	Same as above.
25-32	STATNS(4)	F8.0	Same as above.
33-40	STATNS(5)	F8.0	Same as above.
41-48	STATNS(6)	F8.0	Same as above.
49-56	STATNS(7)	F8.0	Same as above.
57-64	STATNS(8)	F8.0	Same as above.
65-72	STATNS(9)	F8.0	Same as above.
73-80	STATNS(10)	F8.0	Same as above.

(Continue with up to 100 Station Cards until the number of STATNS equals NOSTAS.)

LAST CARD End Card

FIGURE 3

HEC II DIRECTORY

NORTH CENTRAL ZONE

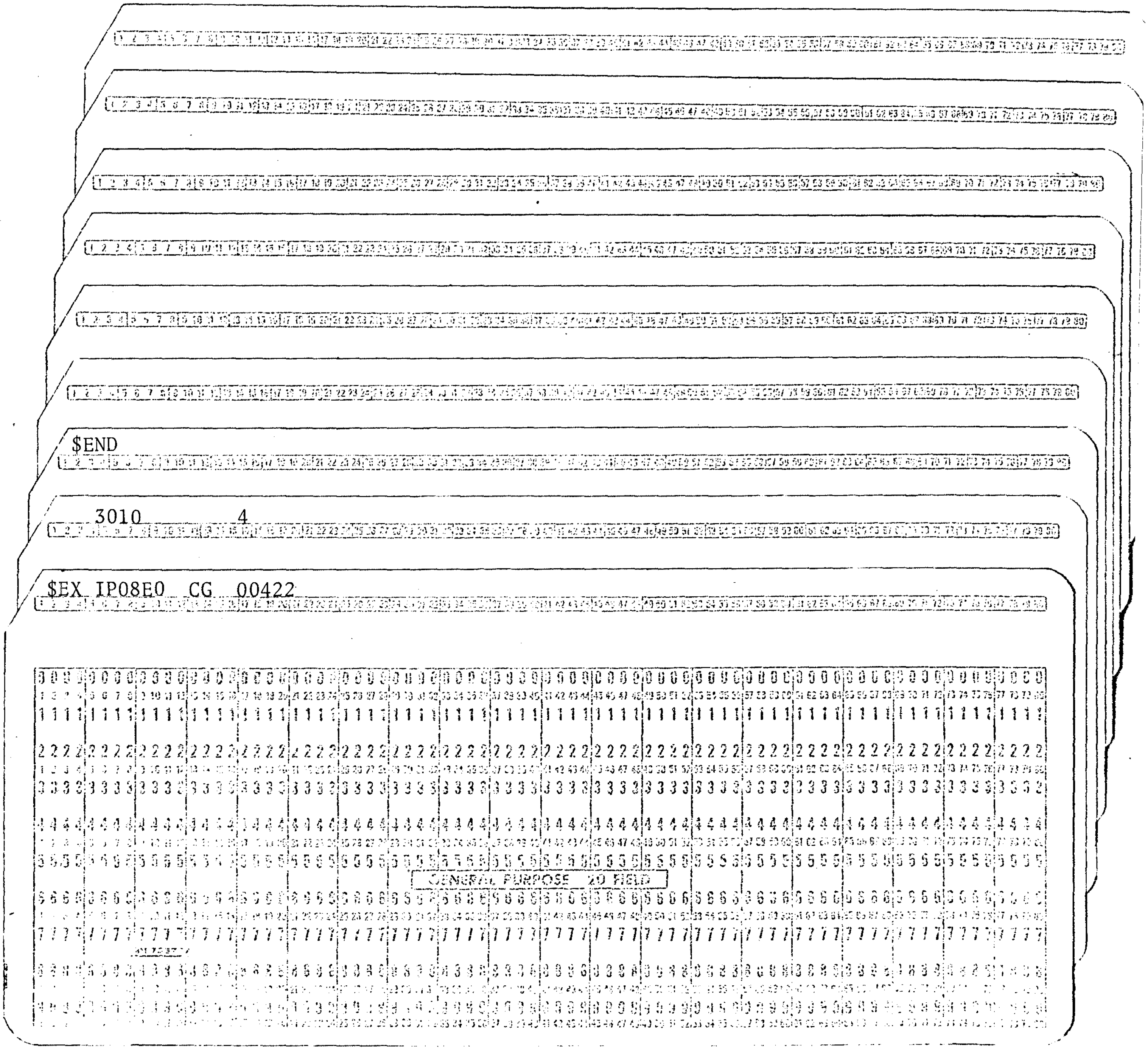
FILE	CREEK	RUN	START	END	DESCRIPTION	
2	2010	1	1	438	CALABAZAS CREEK STA 340+75 - 523+62	3
2	2010	2	439	666	CALABAZAS CREEK STA 525+62 - 584+62	4
2	2010	3	667	850	CALABAZAS CREEK STA 525+62 - 584+62 100	4
2	2010	4	851	1087	CALABAZAS CREEK STA 525+62 - 584+62	4
2	2010	5	1088	1244	CALABAZAS CREEK CONFL GUADALUPE SLOUGH	4
2	2010	6	1245	1451	CALABAZAS CREEK BAYLANDS - STA 195+32	4
2	2010	7	1452	1809	CALABAZAS CREEK STA 195+52 - 338+19	4
2	2010	8	1810	2316	CALABAZAS CREEK SUPER CRITICAL FLOWS	4
2	2010	9	2317	2474	CALABAZAS CREEK @ GUADALUPE SLOUGH	4
2	2010	10	2475	2687	CALABAZAS CREEK @ HIGHWAY 101	4
2	2010	11	2688	3200	CALABAZAS CREEK SUPERCRITICAL FLOW	4
2	2019	1	3201	3699	SAN TOMAS AQUINO @ QUITO RD	5
2	2019	2	3700	4022	SAN TOMAS AQUINO @ BAYSHORE FREEWAY	5
2	2021	1	4023	4544	SARATOGA CREEK @ RAILROAD BRIDGE	5
2	2021	2	4545	4944	SARATOGA CREEK @ SAN TOMAS AQUINO	5
2	2023	1	4945	5158	SMITH CREEK @ WEDGEWOOD AVE	5
2	2030	1	5159	5472	WILDCAT CREEK	5

CENTRAL ZONE

FILE	CREEK	RUN	START	END	DESCRIPTION	
3	3010	1	1	176	ALAMITOS CREEK CAMDEN TO MCKEAN	5
3	3010	2	177	318	ALAMITOS CREEK INCOMPLETE RUN	5
3	3010	3	319	670	ALAMITOS CREEK PERC POND TO CAMDEN	5
3	3010	4	671	806	ALAMITOS CREEK CALERO CONFL. TO MCKEAN	5
3	3010	3	807	1105	ALAMITOS CREEK PERC POND TO CAMDEN	6
3	3011	2	1106	1535	CANOAS CREEK @ EDELWEISE DR *	6
3	3011	3	1536	1877	CANOAS CREEK @ SANTA TERESA BLVD *	6
3	3011	4	1878	2210	CANOAS CREEK CALERO AVE TO CAPITOL	6
3	3012	1	2211	2407	ARROYO CALERO CREEK	6
3	3020	1	2408	2646	LOS GATOS CREEK GUADALUPE TO LINCOLN *	6
3	3020	2	2647	2844	LOS GATOS CREEK	6
3	3020	3	2845	3087	LOS GATOS CREEK	6
3	3023	1	3088	3457	ROSS CREEK GUADALUPE TO CAMDEN	6
3	3023	2	3458	3859	ROSS CREEK ? INCOMPLETE	6
3	3026	0	3860	4227	COYOTE GUADALUPE SWALE	7
3	3026	1	4228	4693	GUADALUPE RIVER BAY TO BROKOW RD.	7
3	3026	2	4694	5161	GUADALUPE RIVER BROKOW RD TO AUZERAIS	7
3	3026	3	5162	5512	GUADALUPE RIVER 280 TO ALMADEN	7

EXAMPLE 8A

HEC II Library Run



```
$END
  3010         4
$EX IP08E0  CG  00422
```

GENERAL PURPOSE 20 FIELD

```
                                                                                THIS RUN EXECUTED  2/24/83  10:21
**************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED JULY1979
 ERROR CORR -  01,02,03
 MODIFICATION -  50,51,52
**************************************************


NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST


 CAMDEN TO MCKEAN - SCVW

SUMMARY PRINTOUT


       SECNO      RHEL     XLBEL    ENDST     ELMIN       Q        CWSEL    DEPTH     VCH     AREA    TOPWID    K*WTN

        0.000    284.00   300.00  5221.50    276.00   6750.00    285.50     9.50     4.09  1720.06   319.75      0.00

      100.000    284.00   284.00  5195.76    276.50   4750.00    285.73     9.23     3.21  1629.40   507.19     49.50

      300.000    288.00   284.00  5132.50    278.00   4750.00    286.00     8.00     4.09  1163.90   259.51     49.67

*     500.000    288.00   288.00  5086.47    281.00   4750.00    287.23     6.23    10.44   455.01   134.54     49.71

      700.000    288.00   288.00  5210.00    283.00   4750.00    290.14     7.14     5.11  1078.14   310.00     48.96

      900.000    299.40   291.00  5402.43    286.00   4750.00    290.86     4.86     7.87   603.40   204.02     49.73

*    1107.000    299.80   299.80  5395.28    287.00   4750.00    294.11     7.11     9.34   508.80   176.34     44.15

*    1108.000    296.70   296.70  5400.91    287.00   4750.00    294.28     7.28     9.72   488.47   180.21     44.09

*    1153.000    296.70   296.70  5407.72    287.00   4750.00    295.64     8.64     6.41   741.42   191.35     43.12

     1154.000    299.80   299.80  5402.53    287.00   4750.00    295.68     8.68     6.30   754.11   186.13     43.06

     1300.000    298.90   298.70  5447.29    287.00   4750.00    296.17     9.17     5.22   909.17   222.20     43.25

     1663.000    299.60   299.80  5387.78    291.50   4750.00    297.89     6.39     6.33   750.31   214.75     43.60

     2166.000    303.10   302.20  5387.09    292.50   4750.00    301.20     8.70     6.10   778.20   210.36     43.90

     2667.000    306.50   306.50  5407.79    296.50   4750.00    304.68     8.18     7.05   673.73   192.98     44.09

     3172.000    310.40   310.40  5356.41    300.50   4750.00    308.62     8.12     6.07   782.34   220.21     44.22

     3674.000    314.70   314.70  5438.32    304.50   4750.00    312.51     8.01     7.25   655.25   211.04     44.32

     4175.000    320.60   320.50  5380.82    308.50   4750.00    316.63     8.13     6.47   734.57   178.42     44.39

     4678.000    324.20   324.20  5395.93    314.50   4750.00    320.92     6.42     8.58   553.74   188.32     44.44

     5160.000    328.60   328.00  5356.89    316.50   4750.00    325.78     9.28     7.36   645.23   126.33     44.49

     53[illegible].000    329.10   329.40  5447.27    318.00   4750.00    326.77     8.77     5.95   797.81   203.55     44.49
```

IP09S1 - ENVIRONMENT

This program produces summaries of environmental quality data. One summary contains environmental habitat classifications, an indicator of the quantity of vegetation, an indicator of habitat quality, and flags for groundwater recharge and recreational use on each reach of channel. Another summary contains the habitat classification, vegetative quantity and habitat quality information along with channel type in each reach. On either of these two summaries, dominant vegetative species may be printed out for each reach.

The execution deck is set up as follows:

CARD 1	Execution Card
CARD 2	Time Card
CARD 3	Data Card
CARD 4	Title Card

Column	Variable	Format	Description
1-72	TITLE	12A6	e.g. East Zone Environmental Summary

CARD 5 Job Card

Column	Variable	Format	Description
8	IDMSP	I1	Enter 0 if you do not want dominant vegetative species to be printed out for each reach of channel. Enter 1 if you want dominant vegetative species to be printed out for each reach of channel.

16	ICHNTP	I1	Enter 0 if you want groundwater recharge and recreational use information for each reach of creek. Enter 1 if you want channel type information for each reach of creek.
24	IMASTR	I1	Enter 0 if only printed output is needed. Enter 1 if intermediate output file (IP09K3) is to be written in order to update master file. If this option is used, no creek cards should follow this Job Card. Creek numbers will be read from the input file (IP09K2). Enter 2 if intermediate output file (IP01K3) is to be written for specific creeks. For this option, creek cards must be used.
31-32	IDEBUG	I2	Enter 0 if no debugging output is to be written during execution. Enter a digit from 1 to 10 to have debugging statements written during execution. Level 1 will trace entrance and exit from subroutines; Level 10 will give maximum debugging aid.
40	MASTYP	I1	Enter 0 if the permanent master file will be used. Enter 1 if the alternative master file will be used.

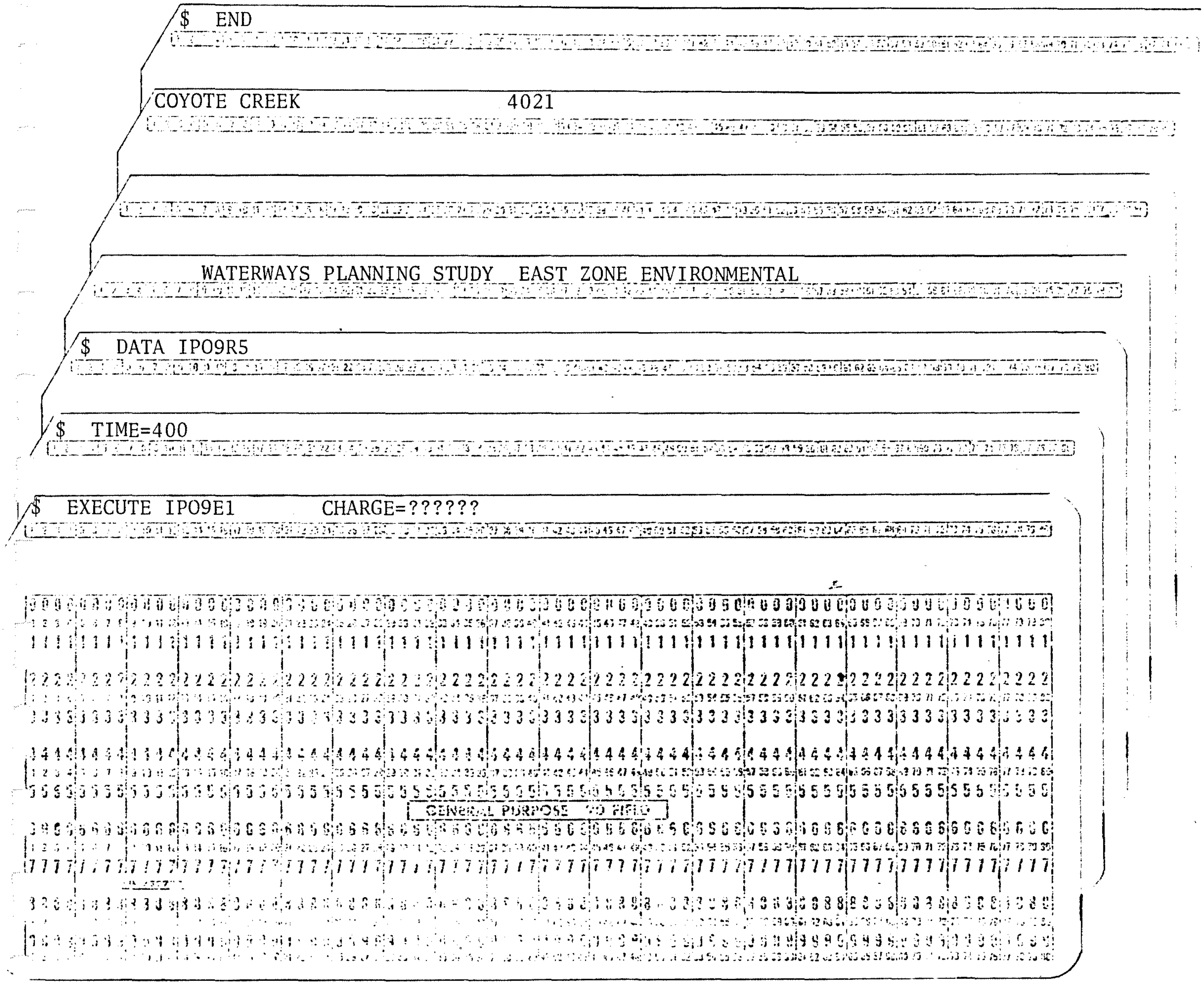
CARD 6, 7, etc. Creek Cards

Column	Variable	Format	Description
1-24	CREEK	4A6	Name of creek
29-32	NCRKM	I4	Number of creek (reference Table 3)

LAST CARD End Card

EXAMPLE 9A

Environmental and Multipurposes



```
$  END
COYOTE CREEK                    4021

        WATERWAYS PLANNING STUDY  EAST ZONE ENVIRONMENTAL
$  DATA IP09R5
$  TIME=400
$  EXECUTE IP09E1        CHARGE=??????
```

```
                                                                                                                                  0/ 0/ 0

*********************************************************************************************************************************

                                                    ENVIRONMENTAL CLASSIFICATIONS

                             HABITAT TYPES                  QUANTITY OF VEGETATION                      HABITAT QUALITY
                              (HABTP1-6)                           (QVEG)                                    (HABQ)

                      (-)1 = NO SIGNIFICANT HABITAT             1 = NONE                                 1 = VERY LOW
                             (NEGATIVE INDICATES
                             LIMIT OF JURISDICTION)             2 = SPARSE                               2 = LOW

                         2 = FRESHWATER MARSH                   3 = MODERATE                             3 = MODERATE

                         3 = SALT/BRACKISH MARSH                4 = ABUNDANT                             4 = GOOD

                         4 = GRASSLAND                                                                   5 = HIGH

                         5 = OAK WOODLAND

                         6 = RIPARIAN

*********************************************************************************************************************************
```

IP0951

WATERWAYS PLANNING STUDY   EAST ZONE   ENVIRONMENTAL INVENTORY

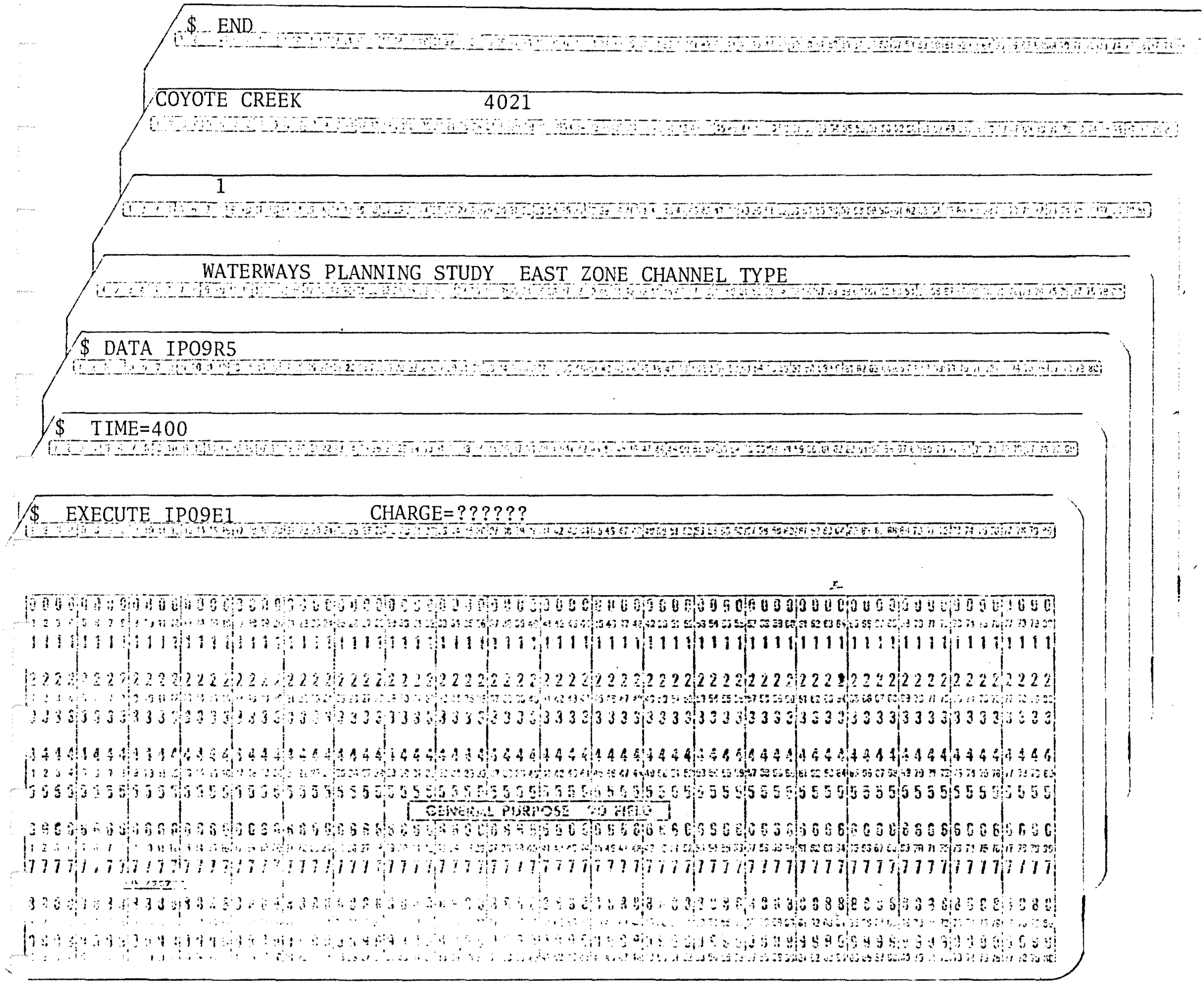
CHANNEL ENVIRONMENTAL CONDITIONS

CREEK	LOCATION	STATION	HABITAT TYPE NO SIG HABITAT	FRESH MARSH	SALT MARSH	GRASS	WOOD-LAND	RIPAR-IAN	VEGETA-TIVE QUANTITY	HABITAT QUALITY	MULTIPURPOSES GW RECHG	RECRE-ATION
COYOTE CREEK	BAY	0.00	ENVIRONMENTAL CONDITIONS UNKNOWN									
COYOTE CREEK	@ LOWER PENITENCIA	446.00			X				ABUNDANT	HIGH		
COYOTE CREEK	N OF DISPOSAL	480.00			X				ABUNDANT	HIGH		
COYOTE CREEK	FOOTBRIDGE	488.00			X				ABUNDANT	HIGH		
COYOTE CREEK	S OF DISPOSAL	500.00			X				ABUNDANT	HIGH		
COYOTE CREEK	HIGHWAY 237	600.00						X	ABUNDANT	HIGH		
COYOTE CREEK	MONTAGUE	735.00		X				X	MODERATE	GOOD		
COYOTE CREEK	KRUSE DR AT DADO	755.00		X				X	MODERATE	MODERATE		
COYOTE CREEK	CHARCOT AVE	779.20		X				X	MODERATE	MODERATE		
COYOTE CREEK	CHARCOT AVE	780.00		X				X	MODERATE	GOOD		
COYOTE CREEK	O'TOOLE AVE BRIDGE	793.00						X	VERY LOW	GOOD		
COYOTE CREEK	HWY 17	797.00		X		X		X	ABUNDANT	HIGH		X
COYOTE CREEK	OLD OAKLAND RD	830.00		X		X		X	ABUNDANT	HIGH		X
COYOTE CREEK	U S 101	930.00		X		X		X	ABUNDANT	HIGH		X
COYOTE CREEK	NR SILVER CRK CONF	950.00		X				X	ABUNDANT	HIGH		X
COYOTE CREEK	I280	1055.00		X				X	ABUNDANT	HIGH		X
COYOTE CREEK	KELLY PARK	1090.00				X	X	X	ABUNDANT	HIGH		X
COYOTE CREEK	YERBA BUENA H S	1170.00		X		X	X	X	ABUNDANT	HIGH		X

EXAMPLE 9B

Environmental and Multipurposes with Dominant Species

(Job Option 1)



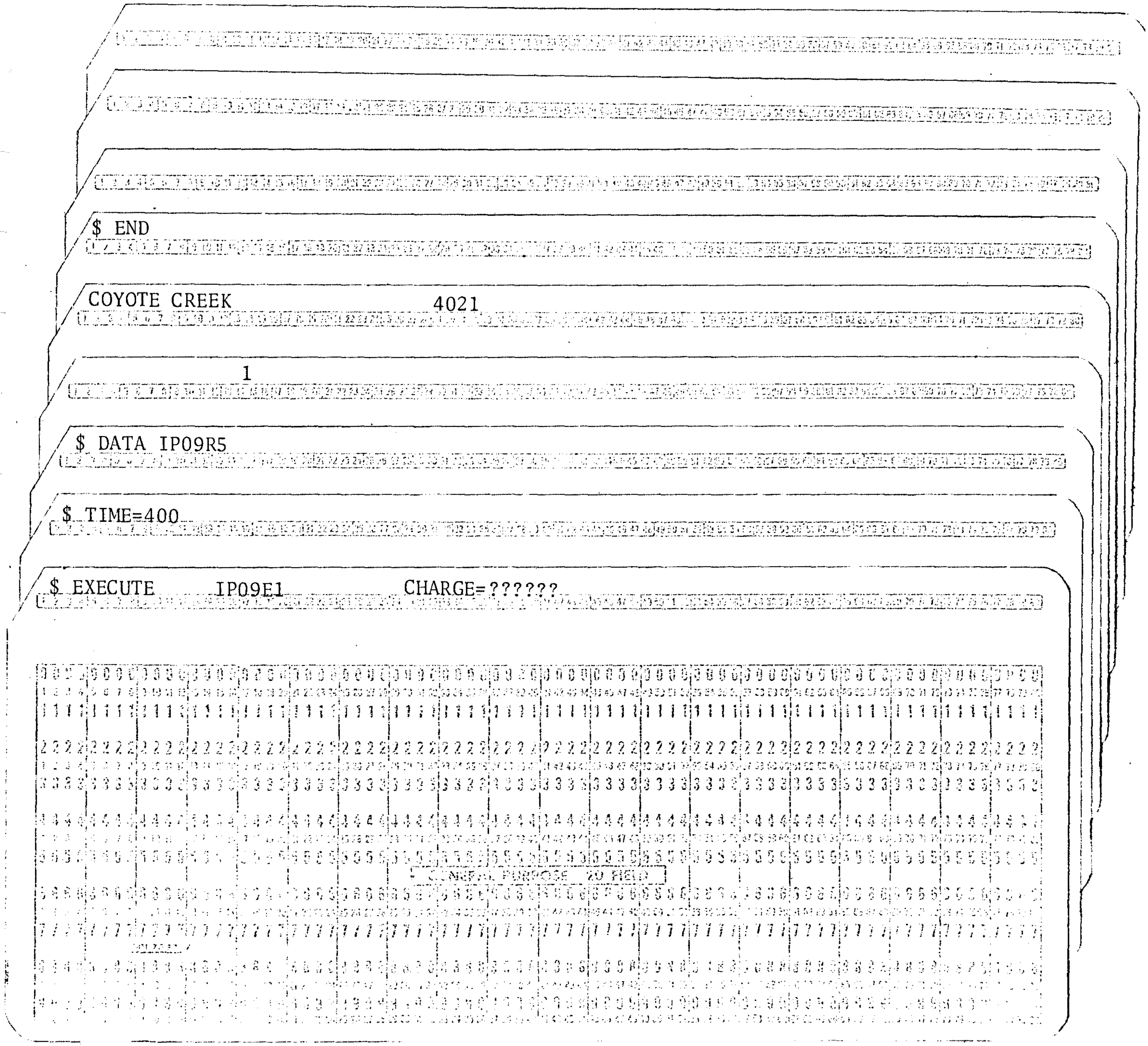
```
$ END
COYOTE CREEK                 4021
        1
          WATERWAYS PLANNING STUDY  EAST ZONE CHANNEL TYPE
$ DATA IP09R5
$  TIME=400
$  EXECUTE IP09E1               CHARGE=??????
```

IP0951

```
WATERWAYS PLANNING STUDY    EAST ZONE    ENVIRONMENTAL INVENTORY

                                                CHANNEL ENVIRONMENTAL CONDITIONS


                                                                HABITAT TYPE                                      MULTIPURPOSES
                                               ----------------------------------------                         ---------------
                                                                                         VEGETA-
                                               NO SIG  FRESH  SALT          WOOD- RIPAR-  TIVE     HABITAT       GW     RECRE-
      CREEK              LOCATION     STATION  HABITAT MARSH  MARSH  GRASS  LAND   IAN   QUANTITY  QUALITY      RECHG   ATION


COYOTE CREEK       BAY                   0.00    ENVIRONMENTAL CONDITIONS UNKNOWN

COYOTE CREEK       @ LOWER PENITENCIA  446.00                 X                          ABUNDANT  HIGH
      DOMINANT SPECIES;  CATTAILS,  CALIFORNIA BULRUSH, SMARTWEED, POISON HEMLOCK, WEEDS

COYOTE CREEK       N OF DISPOSAL       480.00                 X                          ABUNDANT  HIGH
      DOMINANT SPECIES;  POISON HEMLOCK, CALIFORNIA NETTLE, CATTAILS, SMARTWEED

COYOTE CREEK       FOOTBRIDGE          488.00                 X                          ABUNDANT  HIGH
      DOMINANT SPECIES;  CALIFORNIA BOX ELDER, CALIFORNIA NETTLE,CAT TAILS, COYOTE BRUSH,
                         COTTONWOOD, WEEDS

COYOTE CREEK       S OF DISPOSAL       500.00                 X                          ABUNDANT  HIGH
      DOMINANT SPECIES;  CALIFORNIA BOX ELDER, CALIFORNIA NETTLE, CATTAILS,COYOTE BRUSH,
                         COTTONWOOD, WEEDS

COYOTE CREEK       HIGHWAY 237         600.00                                      X     ABUNDANT  HIGH
      DOMINANT SPECIES;  COTTONWOOD, BOX ELDERS, WILLOWS, ELDERBERRY, WALNUTS, SYCAMORE,
                         CALIFORNIA BUCKEYE

COYOTE CREEK       MONTAGUE            735.00         X                            X     MODERATE  GOOD
      DOMINANT SPECIES;  WEEDS, CATTAILS, WILLOWS

COYOTE CREEK       KRUSE DR AT DADO    755.00         X                            X     MODERATE  MODERATE
      DOMINANT SPECIES;  WEEDS, WILLOWS

COYOTE CREEK       CHARCOT AVE         779.20         X                            X     MODERATE  MODERATE

COYOTE CREEK       CHARCOT AVE         780.00         X                            X     MODERATE  GOOD
      DOMINANT SPECIES;  WILLOWS, COTTONWOOD, COYOTE BRUSH, CATTAILS, WINTER ANNUAL GRASSES,
                         RUSSIAN THISTLE, POISON HEMLOCK
```

EXAMPLE 9C

Environmental and Channel Type
(Job Option 1)



```
$ EXECUTE      IP09E1            CHARGE=??????
$ TIME=400
$ DATA IP09R5
                  1
COYOTE CREEK                    4021
$ END
```

IP0951

WATERWAYS PLANNING STUDY   EAST ZONE   ENVIRONMENTAL INVENTORY

CHANNEL ENVIRONMENTAL CONDITIONS

			HABITAT TYPE								
CREEK	LOCATION	STATION	NO SIG HABITAT	FRESH MARSH	SALT MARSH	GRASS	WOOD-LAND	RIPAR-IAN	VEGETA-TIVE QUANTITY	HABITAT QUALITY	CHANNEL TYPE
COYOTE CREEK	BAY	0.00	ENVIRONMENTAL CONDITIONS UNKNOWN								TRAP CONCRT
COYOTE CREEK	D/S L.PENITENCIA	440.00	ENVIRONMENTAL CONDITIONS UNKNOWN								NATL-UNMDFD.
COYOTE CREEK	• LOWER PENITENCIA	446.00			X				ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	N OF DISPOSAL	480.00			X				ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	SEWAGE TREATMENT	485.00			X				ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	FOOTBRIDGE	488.00			X				ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	S OF DISPOSAL	500.00			X				ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	D/S MCCARTHY LN	550.00			X				ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	D/S HWY. 237	560.00			X				ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	AGNEWS ST. HOSP	595.00			X				ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	HIGHWAY 237	600.00						X	ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	U/S TRIMBLE ROAD	630.00						X	ABUNDANT	HIGH	EXC. EARTH
COYOTE CREEK	CHARGOT AVE	665.00						X	ABUNDANT	HIGH	EXC. EARTH
COYOTE CREEK	D/S RIDDER PARK D	734.00						X	ABUNDANT	HIGH	NATL-UNMDFD.
COYOTE CREEK	MONTAGUE	735.00		X				X	MODERATE	GOOD	NATL-UNMDFD.
COYOTE CREEK	KRUSE DR AT DADO	755.00		X				X	MODERATE	MODERATE	NATL-UNMDFD.
COYOTE CREEK	D/S L. SILVER CR	770.00		X				X	MODERATE	MODERATE	NATL-UNMDFD.
COYOTE CREEK	CHARCOT AVE	779.20		X				X	MODERATE	MODERATE	NATL-UNMDFD.

```
          SUMMARY OF CHANNEL ENVIRONMENTAL CONDITIONS

      THIS SUMMARY INCLUDES A TOTAL OF    89.25  MILES OF CHANNEL.

      HABITAT TYPES:

           THERE ARE     3.33  MILES OF NO SIGNIFICANT HABITAT

           THERE ARE    36.21  MILES OF FRESHWATER MARSH

           THERE ARE     4.02  MILES OF SALT/BRACKISH MARSH

           THERE ARE    44.78  MILES OF GRASSLAND HABITAT

           THERE ARE    26.23  MILES OF OAK WOODLAND HABITAT

           THERE ARE    47.73  MILES OF RIPARIAN HABITAT

      QUANTITY OF VEGETATION:

           THERE ARE     4.06  MILES WITH NO VEGETATION

           THERE ARE    16.62  MILES WITH SPARSE VEGETATION

           THERE ARE    16.61  MILES WITH MODERATE VEGETATION

           THERE ARE    42.68  MILES WITH ABUNDANT VEGETATION

      QUALITY OF HABITAT:

           THERE ARE     8.42  MILES WITH VERY LOW QUALITY HABITAT

           THERE ARE     9.61  MILES WITH LOW QUALITY HABITAT

           THERE ARE    13.14  MILES WITH MODERATE QUALITY HABITAT

           THERE ARE     7.99  MILES WITH GOOD QUALITY HABITAT

           THERE ARE    40.88  MILES WITH HIGH QUALITY HABITAT

      THERE ARE    21.86  MILES WHICH PROVIDE GROUNDWATER RECHARGE

      THERE ARE    36.53  MILES WHICH PROVIDE RECREATIONAL BENEFITS
```

IP10S1 - ASSESSOR'S MASTER FILE

This program extracts land use, parcel size and property values from the Assessor's master file for parcels which are in the floodplain. These parcels are then ranked by flood control zone, and within each flood control zone are ranked according to land use. This sorted file is called IP10K3. This information is then further condensed into the flood damage program's primary data file, IP01K2, by a subroutine of the flood damage program, IP01S1. (NOTE: This subroutine is not yet written.)

IP10S1 is a Cobol program which was written and is maintained by the District's Data Processing Division.

User input to IP10S1 consists of data entered on cards or in a disk pack file (IP10K1). This data tells the program which parcels to extract from the Assessor's master file, and provides supplemental data necessary to evaluate flooding of those parcels. This data includes sources of flooding for each parcel and the specific depths to which the parcel is flooded. Each input data record has the following layout:

Column	Variable	Format	Description
1	CODE	I1	Enter A if this parcel is being added to the floodplain data file. Enter C if data for this parcel is being changed. Enter D if this parcel is being deleted from the floodplain data file.
2	CARDNO	I1	Enter 1 if this is the first card or record of information on this parcel.

			Enter 2 if this is the second card or record of information on this parcel.
4-11	APN	I8	Enter the Assessor's Book-Page-Parcel number (e.g. 59106099 indicates Book #591, Page #6, Parcel #99).
13-22	CRKSTA(1)	F10.0	Enter the creek and station from which the parcel is flooded (e.g. 40211020.5 indicates Creek 4021, Station 1020.5).
24-33	CRKSTA(2)	F10.0	Enter a second creek and station from which the parcel is flooded.
35-44	CRKSTA(3)	F10.0	Enter the creek and station from which the parcel is flooded.
46-48	F0	F4.0	Enter the percent to which the parcel does not flood (e.g. If half of a 10-acre parcel does not flood, enter 0.5. The parcel size will be read from the Assessor's master file.
50-52	FL1	F4.0	Enter the percent to which the parcel floods to a depth less than one foot.
54-56	F1	F4.0	Enter the percent to which the parcel floods to a depth of one foot.

58-60	F2	F4.0	Enter the percent to which the parcel floods to a depth of two feet.
62-64	F3	F4.0	Enter the percent to which the parcel floods to a depth of three feet.
66-68	FG3	F4.0	Enter the percent to which the parcel floods to a depth greater than three feet.

NOTE: The sum of F0, F11, F1, F2, F3, FG3 must equal 1.

Columns 73-80 are reserved for sequence numbers if this data is being entered into disk pack file IP10K1.

There may be two cards or records for a parcel if necessary.

This allows the user to indicate that a parcel floods from up to six sources (the depths of flooding will be taken from the first card only). For example, if you wanted to enter data for parcels west of Lower Penitenica near Redwood Avenue, you would be able to indicate that those parcels flood from Lower Penitenica at several stations, as well as from Upper Penitenica and Berryessa Creeks. The second data card or record would contain the appropriate CODE, CARDNO=2, APN, and up to three additional CRKSTA, which are read as CRKSTA(4), CRKSTA(5), and CRKSTA(6). If you want to add any of these CRKSTA, the CODE would be A; if you want to delete or change any of these CRKSTA, the CODE would be D or C, respectively. To change the depth of flooding for this parcel, enter CODE=C, CARDNO=1, APN, and the new depths of flooding.

A very important feature of the change routine is that if a field is left blank, that variable will retain its old value. For example, if you want to get rid of a CRKSTA after a creek has been improved, you must enter 0.0 in the appropriate CRKSTA field. If the field is simply left blank on the change card, the old CRKSTA will remain in the file. For the same reason, if you want to change the depth of flooding, be sure to enter 0.0 in the fields which no longer have percent values in them.

Once this data has been punched on cards or entered into IP10K1, a three-step procedure is performed by submitting three sets of cards to the computer operator. The first step executes IP10S1 and adds, changes or deletes records to data file IP10K2. IP10K2 contains floodplain parcel information extracted from the Assessor's master file as well as floodplain parcel information from IP10K1. If the SORT flag is 1 on the Flag Card, the program will then sort IP10K2 by flood control zone and within each zone by land use category. This sorted data file is called IP10K3. The second step dumps all three files IP10K1, IP10K2, and IP10K3 to magnetic tape for backup. The third step removes IP10K1 from disk pack. The computer operator will automatically perform these three steps according to the Run Sheet on file. A copy of this Run Sheet is in the IP10S1 information binder in Predesign Division. Each time IP10S1 is executed, a record of the Run Date, IP10TD number, and record count should be made in the IP10S1 information binder.

The execution decks are set up as follows:

STEP 1

CARD 1	Execution Card
CARD 1	Data Card
CARD 3	Flag Card

Column	Variable	Format	Description
1-6	INPUT		Enter $$IP10
8-13	OUTPUT		Enter IP10K2
15	SORT		Enter 0 if you do not want IP10K2 to be sorted by flood control zone and within each zone by land use category. Enter 1 if you want IP10K2 to be sorted by flood control zone and within each zone by land use category.

CARD 4 End Card

STEP 2

CARD 1 Execution Card ("123" Multipunch in Column 1, followed by: DUMP/COMPARE/DPK IP10TD FROM ENGDAT-)

CARD 2 File Card (Enter IP10K1 - in Columns 1 through 7)

CARD 3 File Card (Enter IP10K2 - in Columns 1 through 7)

CARD 4 File Card (Enter IP10K3 - in Columns 1 through 7)

CARD 5 Stop Card (Enter a period "." in Column 1)

CARD 6 End Card

STEP 3

CARD 1 Execution Card ("123" Multipunch in Column 1, followed by: REMOVED IP10K1 ON ENGDAT)

CARD 2 End Card

APPENDIX A

DATA FILES

DATA FILES

Data files are generally divided into three categories:

(1) primary data files
(2) intermediate output files
(3) master file

Primary data files contain data which is taken directly from external sources (e.g. FIA maps, the District's design flows manual, observations of erosion and environment, the County Assessor's master file, soil characteristic maps, etc.). These files generally have names which end in "K2": IP01K2, IP02K2, IP03K2, IP09K2. The exceptions are the HECII decks which are stored on five disk pack files: IP08KA, IP08KB, IP08KC, IP08KD, IP08KE, and the HEC II temporary file IP08K2 which stores the data so it will not be lost during rewrite. The Waterways Management Model uses this data to produce further information such as 1% flood damages, average annual damages, and estimates of erosion and sediment. This output is written to files having names which end in "K3": IP01K3, IP02K3, IP03K3, IP08K3, IP09K3. These output files also contain certain key variables which are carried along to be put into the master file. The output, plus these key variables, are then combined into a comprehensive, easily-accessed master file (IP00K1). The master file serves as the single source of data input to some programs (IP04S1, IP05S1, IP06S1), and supplements the primary data input to other programs (IP01S1, IP02S1, IP03S1, IP09S1).

In general, primary data files have records which are 80 bytes long. This allows users to build and edit the data files from the computer terminals using PRO; the first 72 bytes contain data, and the last 8 bytes are reserved for sequence numbers. The PRO manual should be consulted for information on how to edit these files. The intermediate output files (K3 files) are not meant to be edited on the computer terminal. These files are written by the applications programs and, if an error exists in them, it should be corrected by correcting the input K2 file and rerunning the program. IP01K3, IP02K3, IP03K3 and IP08K3 records are 160 bytes long; therefore, DEO (Data Editing On-Line) must be used to list these files on the computer terminal (see PRO manual). The master file records are 450 bytes long and cannot be listed on the computer terminal. However, the output option in program IP07S1 (JOBTYP=3) allows users to get formatted output of master file records either as printout or as disk files on ENGDAT.

Printed copies of the primary data files may be obtained by submitting the following card deck:

CARD 1	Type Invalid Character in Column 1, followed by: EX QU07ED CG ?????? DATA QU07C0
CARD 2	Type the disk pack and file name, e.g. ENGDAT/IP01K2, from Column 1 through Column 13.
CARD 3	Type Invalid Character in Column 1, followed by: END

IP01K2

This file contains data necessary to evaluate flood damages, flood insurance costs, floodproofing costs, and floodplain acquisition costs.

For each station of each creek, data is entered as follows:

RECORD 1 Creek Record

Column	Variable	Format	Description
1-24	CREEK	4A6	Creek name
29-32	NCRK	I4	Creek number (reference Table 3)
33-56	WHERE	4A6	Location of station
57-64	STA	F8.0	Station number

RECORD 2 "K" Record (reference Table 4 for a definition of land uses)

Column	Variable	Format	Description
4	K1	I1	Enter the number of records to be read for single family residential land (RD).
8	K2	I1	Enter the number of records to be read for high density residential land (RC).

12	K3	I1	Enter the number of records to be read for mobile homes (MH).
16	K4	I1	Enter the number of records to be read for commercial land (LC).
20	K5	I1	Enter the number of records to be read for industrial land (LM, LI).
24	K6	I1	Enter the number of records to be read for schools and public buildings (LS).
28	K7	I1	Enter the number of records to be records to be read for open improved land, such as parks, golf courses,and parking lots (OI, TS).
32	K8	I1	Enter the number of records to be read for agricultural land (AA, AP).
36	K9	I1	Enter the number of records to be read for vacant, unimproved land (OU, AG).
40	K10	I1	Enter the number of records to be read for critical facilities.

RECORD 3 through RECORD (2+K1+K2+K3+K4+K5+K6+K7+K8+K9)

Single Family Residential Land (RD)

Column	Variable	Format	Description
1-7	(-)FL1	F7.0	Enter the acreage subject to flooding of less than 1 foot.
8-14	(-)F1	F7.0	Enter the acreage subject to flooding of 1 foot.
15-21	(-)F2	F7.0	Enter the acreage subject to flooding fo 2 feet.
22-28	(-)F3	F7.0	Enter the acreage subject to flooding of 3 feet.
29-35	(-)FG3	F7.0	Enter the acreage subject to flooding greater than 3 feet.

NOTE: If any of the values for FL1, F1, F2, F3, FG3 are preceded by a negative sign, then the number of buildings or structures is being specified instead of the number of acres. With this option, the values for AVL and AVI must be in terms of $/parcel or $/building, and NOT in terms of $/acre.

Column	Variable	Format	Description
36-42	DNSTY	F7.0	Enter the density of buildings/acre (e.g. single family residential ranges between 3 and 6 homes/acre). It is important to keep the units of DNSTY consistent with the values for AVL and AVI.

43-49	(-)AVL	F7.0	Enter the average assessed value of land only, in thousands of $/acre. The program will automatically multiply this value by eight to estimate market value. If the value is preceded by a negative sign, it is an estimate of market value, and will not be adjusted by the factor of eight.
50-56	(-)AVI	F7.0	Enter the average assessed value of improvements only, in thousands of $/acre. As with assessed land values (AVL), the program will multiply by eight to estimate market value if no negative sign is entered.
57-64	KREI	F7.0	Enter the Real Estate Index, used to keep property values updated. Enter the median home price for the San Jose area at the time when AVL and AVI are first estimated. Such values are published regularly by the San Jose Real Estate Board.
66-72	MAPSBA	A6	Enter the code number for the flooded area recorded on the FIA flood maps (e.g. 20-A indicates sheet #20, area A).

NOTE: The number of Single Family Residential Records must equal K1.

High Density Residential Record

Same as Single Family Residential Record except for areas of high density residential development.

NOTE: The number of High Density Residential Records must equal K2.

Mobile Home Record

Same as Single Family Residential Record except for areas containing mobile homes.

NOTE: The number of Mobile Home Records must equal K3.

Commercial Record

Same as Single Family Residential Record except for commercial areas.

NOTE: The number of Commercial Records must equal K4.

Industrial Record

Same as Single Family Residential Record except for manufacturing and industrial areas.

NOTE: The number of Industrial Records must equal K5.

Public Facility Record

Same as Single Family Residential Record except for areas containing schools and public facilities.

NOTE: The number of Public Facility Records must equal K6.

Open Improved Record

Same as Single Family Residential Record except for open improved areas such as parks, golf courses, cemetaries, parking lots, etc.

NOTE: The number of Open Improved Records must equal K7.

Agricultural Record

Column	Variable	Format	Description
1-7		F7.0	Enter total acreage of agricultural land in annual crops such as row crops (AA).
8-14		F7.0	Enter total acreage of agricultural lands in perennial crops such as vineyards and orchards.
15-21		F7.0	Enter total acreage of agricultural lands which are outside the urban service boundaries.
43-49	(-)AVL	F7.0	Enter the average assessed value of agricultural land. If preceded by a negative sign, the program will multiply this value by eight to estimate market value.
57-63	KREI	F7.0	Enter the Real Estate Index which corresponds with the average assessed value of agricultural lands.
66-72	MAPSBA	A6	Enter the map and subarea code, same as for Single Family Residential Record.

Note: The number of Agricultural Records must equal K8.

Vacant Land Record

Column	Variable	Format	Description
1-7		F7.0	Enter the total acreage of vacant, unimproved land subject to flooding such as agricultural grazing land (AG) and broadleaf vegetated land (VL).
8-14		F7.0	Enter the total acreage of vacant, unimproved land outside urban services boundaries.
15-21		F7.0	Enter the total acreage of the salt evaporator ponds.
43-49	(-)AVL	F7.0	Enter the average assessed value of vacant, unimproved land. If preceded by a negative sign, the program will multiply this value by eight to estimate market value.
57-63	KREI	F7.0	Enter the Real Estate Index.
66-72	MAPSBA	A6	Enter the map and subarea code, same as for Single Family Residential Records.

NOTE: The number of Vacant Land Records must equal K9.

Critical Facility Record

1-72	FACIL	12A6	List critical facilities in the floodplain such as firehouses, schools, hospitals, major transportation arteries, etc.

NOTE: The number of Critical Facilities Records must equal K10.

FIGURE 4

Data File - Damages

```
*********************************************** E N G D A T   F I L E   L I S T I N G ********************************************
*        NUMBER          FILE                                                                            RUN           PAGE
*        RECORDS         NAME                                                                            DATE          NO
*         1924           IP01K2                                                                         12/27/82          1
**********************************************************************************************************************************
*
*                                                                                                          1         1         1
*                1         2         3         4         5         6         7         8         9         0         1         2
*       123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
*
*    1   COYOTE CREEK               4021CONFL.W/BAY                  0.00       00000100
*    2     0   0   0   0   0   0   0   0   0   0                                00000200
*    3   COYOTE CREEK               4021 D/S OLD MILPITAS SEWAGE   485.00       00000300
*    4     0   0   0   0   0   1   0   3   1   1                                00000400
*    5     78.0    0.0    0.0    0.0    0.0   0.00 -132.0    0.0  117.6    20-4 00000800
*    6    153.0   24.0    0.0    0.0    0.0   0.00 -132.0    0.0  117.6    20-3 00001000
*    7    119.0   35.0    0.0    0.0    0.0   0.00 -132.0    0.0  117.6    20-5 00001100
*    8      5.0    4.0    0.0    0.0    0.0   0.00  -50.0    0.0  117.6    35-1 00001200
*    9     50.0    0.0    0.0    0.0    0.0   0.00  -50.0    0.0  117.6    20-7 00001300
*   10   SEWAGE TREATMENT PLANT                                                 00001400
*   11   COYOTE CREEK               4021D/S RT. 237                595.00       00001500
*   12     0   0   0   0   0   0   0   0   0   0                                00001600
*   13   COYOTE CREEK               4021N. OF AGNEWS ST. HOSP.     630.00       00001700
*   14     0   0   2   1   0   0   0   3   0   1                                00001800
*   15     25.0    0.0    0.0    0.0    0.0   8.00 -400.0 -495.0  117.6    35-2 00001900
*   16      0.0    0.0   50.3    0.0    0.0   8.00 -400.0 -495.0  117.6    35-C 00002000
*   17      6.0    0.0    0.0    0.0    0.0   0.20 -200.0 -412.9  117.6    35-2 00002100
*   18    256.0   31.0    0.0    0.0    0.0   0.00  -50.0    0.0  117.6    35-2 00002200
*   19     47.0    0.0    0.0    0.0    0.0   0.00  -50.0    0.0  117.6    35-3 00002300
*   20    101.3   49.0    0.0    0.0    0.0   0.00  -50.0    0.0  117.6    35-C 00002400
*   21   AGNEWS ST. HOSP.(EAST)                                                 00002500
*   22   COYOTE CREEK               4021 AT AGNEWS ST. HOSP.       665.00       00002600
*   23     0   0   0   0   0   0   0   0   0   0                                00002700
*   24   COYOTE CREEK               4021U/S TRIMBLE RD.            755.00       00002800
*   25     0   0   0   0   2   0   0   1   0   0                                00002900
*   26     12.0    0.0    0.0    0.0    0.0   0.08 -130.0 -289.0  117.6    51-5 00003000
*   27      5.0  109.0   12.0   23.0   12.0   0.16 -130.0 -289.0  117.6    50-1 00003100
*   28     43.0    5.0    0.0    0.0    0.0    0.0 - 50.0         117.6    35-C 00003200
*   29   COYOTE CREEK               4021 D/S CHARCOT AVE.          770.00       00003300
*   30     0   0   0   0   0   0   0   0   0   0                                00003400
*   31   COYOTE CREEK               4021U/S HWY.17                 800.00       00003500
*   32     0   0   0   0   0   0   0   0   1   0                                00003600
*   33     23.0    0.0    0.0    0.0    0.0   0.00  -50.0    0.0  117.6    51-4 00003700
*   34   COYOTE CREEK               4021 D/S SPRR                  810.00       00003800
*   35     0   0   0   0   0   0   0   0   0   0                                00003900
*   36   COYOTE CREEK               4021U/S OLD OAKLAND RD.        830.00       00004000
*   37     0   0   1   0   0   0   1   0   1   0                                00004100
*   38     70.0    0.0    0.0    0.0    0.0   9.00 -132.0 -450.0  117.6    51-1 00004200
*   39     41.0    0.0    0.0    0.0    0.0   0.00 -132.0    0.0  117.6    51-1 00004300
*   40     30.0    0.0    0.0    0.0    0.0   0.00 -130.0    0.0  117.6    51-1 00004400
*   41   COYOTE CREEK               4021 U/S TRAILER PARK          870.00       00004500
*   42     0   1   0   0   1   0   1   1   1   1                                00004600
*   43      4.0    0.0    0.0    0.0    0.0   7.00 -324.6 -420.0  117.6    67-4 00004700
*   44     51.0    0.0    4.0    0.0    0.0   0.12 -130.0 -289.0  117.6    67-4 00004800
*   45      6.0    0.0    6.0    0.0    0.0   0.00 -132.0    0.0  117.6    67-4 00004900
*
**********************************************************************************************************************************
```

IP02K2

This file contains data, most of the data necessary to compute erosion potential, estimate sediment yield and summarize channel geometry.

For each station or each creek, data is entered as follows:

RECORD 1 Creek Record

Column	Variable	Format	Description
1-24	CREEK	4A6	Creek name
29-32	NCREEK	I4	Creek number (reference Table 3)
33-56	WHERE	4A6	Location or station
57-64	STA	F8.0	Station number
69-72	CRKCON	I4	Confluence creek number

RECORD 2 "C" Record

Column	Variable	Format	Description
7-8	TYPE	I2	Channel type (reference Table 5)
9-16	BW	F8.0	Bottom width/pipe diameter*
17-24	ZR	F8.0	Right side slope
25-32	ZL	F8.0	Left side slope
33-40	TW	F8.0	Top width
41-48	CINVEL	F8.0	Invert elevation
49-56	EX1WS	F8.0	Existing 1% water surface elevation
57-64	BANKMN	F8.0	Minimum bank elevation
65-68	C	F4.0	Cover factor
69-72	JDATE	I4	As built data

RECORD 3 "S" Record

Column	Variable	Format	Description
12-16	SOIL	A-4	Soil type
17-24	D75	F8.3	D75 size in MM
25-32	D50	F8.3	D50 size in MM
33-40	PI	F8.0	Plasticity index
41-48	OBSVD	I8	Observed erosion classification

FIGURE 5

Data File - Channel Characteristics

```
*********************************************** E N G D A T   F I L E   L I S T I N G ************************************************
*        NUMBER           FILE                                                                             RUN           PAGE        *
*        RECORDS          NAME                                                                             DATE          NO          *
*         4563            IP02K2                                                                          12/27/82          1        *
**************************************************************************************************************************************
*                                                                                                                                    *
*                                                                                                            1         1         1   *
*                  1         2         3         4         5         6         7         8         9         0         1         2   *
*         123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890   *
*                                                                                                                                    *
*      1  K CALERA CREEK              4018 R.R.DBL.RCB            0.00            00000100                                           *
*      2  C      4      22       0       0             6.4            12.4        00000200                                           *
*      3  SI             0       0       0       0       1                        00000300                                           *
*      4  K CALERA CREEK              4018 END DBL RCB            3.22            00000400                                           *
*      5  C      6      20       0       0             6.8              17        00000500                                           *
*      6  SI             0       0       0       0       1                        00000600                                           *
*      7  K CALERA CREEK              4018NO.MILPITAS BLVD DBL RCB7.00            00000700                                           *
*      8  C      4      20       0       0             7.0              15        00000800                                           *
*      9  SI             0       0       0       0       1                        00000900                                           *
*     10  K CALERA CREEK              4018END DBL RCB             10.00           00001000                                           *
*     11  C     24      10       2       2             7.5    15.6    18.5        00001100                                           *
*     12  SI            CC    .074     .04      11     3.1                        00001200                                           *
*     13  K CALERA CREEK              4018ARIZONA DRIVE RCB       21.68           00001300                                           *
*     14  C      4      16       0       0             9.0              17        00001400                                           *
*     15  SI             0       0       0       0       1                        00001500                                           *
*     16  K CALERA CREEK              4018 U/S ARIZONA DRIVE      22.32           00001600                                           *
*     17  C     24      10       2       2            10.7    18.1    19.7        00001700                                           *
*     18  SI           CSA     .04     .02      21     1.0                        00001800                                           *
*     19  K CALERA CREEK              4018 MILPITAS HIGH SCHOOL   31.00           00001900                                           *
*     20  C     30     0.1    2.75      14            22.3    26.4    28.0        00002000                                           *
*     21  SI           CSA     .04     .02      21       1                        00002100                                           *
*     22  K CALERA CREEK              4018 D/S ESQUELA PARKWAY    39.50           00002200                                           *
*     23  C      4      12       0       0            23.8            32.5        00002300                                           *
*     24  SI             0       0       0       0       1                        00002400                                           *
*     25  K CALERA CREEK              4018 U/S ESQUELA PARKWAY    42.00           00002500                                           *
*     26  C     30      10       2       2              37    41.3      42        00002600                                           *
*     27  SI           CSA     .04     .02      21       1                        00002700                                           *
*     28  K CALERA CREEK              4018 RUSSELL JR. HIGH       53.00           00002800                                           *
*     29  C     24       3    1.50    1.50            81.0    86.8      87        00002900                                           *
*     30  SI           CSA     .04     .02      21       1                        00003000                                           *
*     31  K CALERA CREEK              4018BEGIN I680.RCB          63.00           00003100                                           *
*     32  C      4      10       0       0            82.0            90.0        00003200                                           *
*     33  SI             0       0       0       0       1                        00003300                                           *
*     34  K CALERA CREEK              4018 U/S FWY 680            67.40           00003400                                           *
*     35  C     32       3     .75     .75             100     104     104        00003500                                           *
*     36  SI           RAA     .04     .02      21       1                        00003600                                           *
*     37  K CALERA CREEK              4018 END OF PROJECT         165.50          00003700                                           *
*     38  C                                          157.5                        00003800                                           *
*     39  SI                                                                      00003900                                           *
*     40  K LOS COCHES CREEK          4025BERRYESSA CONFLUENCE    0.00            00004000                                           *
*     41  C     24      10     1.5     1.5            23.4    30.3    30.4     46500004100                                           *
*     42  SI           CSA     .04     .02      30     3.4                        00004200                                           *
*     43  K LOS COCHES CREEK          4025BEGIN HWY 680 RCB       9.00            00004300                                           *
*     44  C      4      10       0       0            28.2    33.2    37.2     46500004400                                           *
*     45  SI           CSA     .04     .02      30       1                        00004500                                           *
*                                                                                                                                    *
**************************************************************************************************************************************
```

IP03K2

This file contains data necessary to compute average annual damages.

For each station of each creek data is entered as follows:

RECORD 1 Creek Record

Column	Variable	Format	Description
1-24	CREEK	4A6	Creek name
29-32	NCRK	I4	Creek number (reference Table 3)
33-56	WHERE	4A6	Location of station
57-64	STA	F8.0	Station number

RECORD 2

Column	Variable	Format	Description
3-8	DA	F6.2	Drainage area (square miles) 0.5 indicates limit of jurisdiction
17-24	Q1	F8.0	1% design flowrate
25-32	Q10	F8.0	10% design flowrate
33-40	EXQ1	F8.0	Existing 1% flowrate
41-48	EXN	F8.3	Existing Manning number
49-56	EXCAP	F8.0	Existing capacity (must reflect EXN)

FIGURE 6

Data File - Flow Rates, Drainage Area, etc.

```
************************************************** E N G D A T   F I L E   L I S T I N G *********************************************
*       NUMBER          FILE                                                                             RUN           PAGE        *
*       RECORDS         NAME                                                                             DATE          NO          *
*        1042           TP03K2                                                                         12/27/82         1          *
***************************************************************************************************************************************
*                                                                                                                                     *
*                                                                                                            1         1         1   *
*                  1         2         3         4         5         6         7         8         9         0         1         2   *
*         123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890   *
*                                                                                                                                     *
*     1     N. BABR CREEK             4012 U/S CONFL WITH L SILVER    0.00        00000100                                           *
*     2        2.57              270     250     450    .035     450                00000200                                           *
*     3     N. BABB CREEK             4012 U/S WHITE ROAD            15.00        00000300                                           *
*     4        2.57              270     250     450    .015     450                00000400                                           *
*     5     N. BABB CREEK             4012 LIMITS OF JURISDICTION    68.00        00000500                                           *
*     6         .50               53      26      53    .050      54                00000600                                           *
*     7     S. BABB CREEK             4013 U/S CONFL WITH L SILVER    0.00        00000700                                           *
*     8        4.00              920     450     290    .015    1950                00000800                                           *
*     9     S. BABB CREEK             4013 D/S WHITE RD              15.00        00000900                                           *
*    10        3.90              920     450     570    .015     390                00001000                                           *
*    11     S. BABB CREEK             4013 U/S WHITE RD              16.50        00001100                                           *
*    12        3.90              920     450     570    .015     570                00001200                                           *
*    13     S.BABB CREEK              4013 D/S LOCHNER               26.00        00001300                                           *
*    14        3.90              920     450     890    .015     570                00001400                                           *
*    15     S.BABB CREEK              4013 U/S LOCHNER               27.00        00001500                                           *
*    16        3.90              920     450     890    .015     890                00001600                                           *
*    17     S. BABR CREEK             4013 AT CLAYTON RD             50.00        00001700                                           *
*    18        3.70              920     450     890    .035     890                00001800                                           *
*    19     S.BABB CREEK              4013 LIMITS OF JURISDICTION   190.50        00001900                                           *
*    20        0.50              120      60     125    .035     125                00002000                                           *
*    21     BERRYESSA CREEK           4017 CONFL WITH L.PENITENCIA    0.00        00002100                                           *
*    22       22.05             4900    2900    2350    .035    3050                00002200                                           *
*    23     BERRYESSA CREEK           4017 D/S CALERA CR              9.50        00002300                                           *
*    24       22.05             5600    3200    2730    .035    4330                00002400                                           *
*    25     BERRYESSA CREEK           4017 D/S ABEL ST (DITCH)       22.00        00002500                                           *
*    26       19.12             4900    2900    2350    .020    3920                00002600                                           *
*    27     BERRYESSA CREEK           4017 D/S DRAINAGE LAGOON       29.00        00002700                                           *
*    28       17.58             4500    2600    2350    .035    3930                00002800                                           *
*    29     BERRYESSA CREEK           4017 D/S TULARCITOS CREEK      76.00        00002900                                           *
*    30       17.03             4500    2600    2120    .035    4770                00003000                                           *
*    31     BERRYESSA CREEK           4017 U/S TULARCITOS CREEK      77.50        00003100                                           *
*    32       15.07             4000    2300    1660    .035    3735                00003200                                           *
*    33     BERRYESSA CREEK           4017 U/S CALAVERAS BLVD        90.00        00003300                                           *
*    34       15.07             4000    2300    1660    .035    2360                00003400                                           *
*    35     BERRYESSA CREEK           4017 D/S LOS COCHES CR         93.50        00003500                                           *
*    36       15.07             4000    2300     800    .035     800                00003600                                           *
*    37     BERRYESSA CREEK           4017 U/S LOS COCHES CR         94.00        00003700                                           *
*    38       11.05             3000    1700    2960    .035     800                00003800                                           *
*    39     BERRYESSA CREEK           4017 D/S PIEDMONT CR          115.50        00003900                                           *
*    40       11.05             3000    1700    1500    .035    1860                00004000                                           *
*    41     BERRYESSA CREEK           4017 U/S PIEDMONT CR          116.00        00004100                                           *
*    42        9.12             2600    1400     940    .035    1310                00004200                                           *
*    43     BERRYESSA CREEK           4017 U/S AMES U/S RR TRACKS   143.00        00004300                                           *
*    44        9.12             2600    1400     940    .030    1310                00004400                                           *
*    45     BERRYESSA CREEK           4017 D/S MONTAGUE EXPWY       166.00        00004500                                           *
*                                                                                                                                     *
***************************************************************************************************************************************
```

IP09K2

This file contains data necessary to summarize environmental quality characteristics for each reach of stream.

For each station of each creek, data is entered as follows:

RECORD 1 Creek Record

Column	Variable	Format	Description
2-20	CREEK	4A6	Creek name
27-30	NCRK	I4	Creek number (reference Table 3)
33-50	WHERE	4A6	Location of station
53-63	STA	F8.2	Station number
64-65	KDMSP	I2	Number of dominant species cards to follow
69-70	UNKNWN	I2	Information is not supplied

RECORD 2

Column	Variable	Format	Description (Enter 1 in the column which best describes the environment)
5	HABTP (1)	I1	No significant habitat
10	HABTP (2)	I1	Freshwater marsh
15	HABTP (3)	I1	Salt/brackish marsh
20	HABTP (4)	I1	Grassland
25	HABTP (5)	I1	Oak woodland
30	HABTP (6)	I1	Riparian
34-35	QVEG	I2	Quantity of Vegetation 1 = None

			2 = Sparse 3= Moderate 4 = Abundant -1= Limit of jurisdiction
40	HABQ	I1	Habitat Quality 1= Very low 2= Low 3= Moderate 4= Good 5= High
45	GWRCHG	I1	Groundwater recharge potential, 1 = yes, 0 = no
50	RECR	I1	Recreation potential, 1 = yes, 0 = no

FIGURE 7

Data File - Environmental

```
*********************************************** E N G D A T   F I L E   L I S T I N G ***********************************************
*        NUMBER             FILE                                                                          RUN              PAGE
*        RECORDS            NAME                                                                          DATE             NO
*          438              IP09K2                                                                        12/27/82           1
**************************************************************************************************************************************
*
*                                                                                                           1         1         1
*                 1         2         3         4         5         6         7         8         9         0         1         2
*       123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
*
*   1     COYOTE CREEK            4021  BAY                       0.         1  00000100
*   2                                                                           00000200
*   3     COYOTE CREEK            4021  # LOWER PENITENCIA     446.0    1       00000300
*   4                 1                   4    5                                00000400
*   5   CATTAILS,  CALIFORNIA BULRUSH, SMARTWEED, POISON HEMLOCK, WEEDS         00000500
*   6     COYOTE CREEK            4021  N OF DISPOSAL          480.0    1       00000600
*   7                 1                   4    5                                00000700
*   8   POISON HEMLOCK, CALIFORNIA NETTLE, CATTAILS, SMARTWEED                  00000800
*   9     COYOTE CREEK            4021  FOOTBRIDGE             488.0    2       00000900
*  10                 1                   4    5                        2       00001000
*  11   CALIFORNIA BOX ELDER, CALIFORNIA NETTLE,CAT TAILS, COYOTE BRUSH,        00001100
*  12   COTTONWOOD, WEEDS                                                       00001200
*  13     COYOTE CREEK            4021  S OF DISPOSAL          500.0    2       00001300
*  14                 1                   4    5                                00001400
*  15   CALIFORNIA BOX ELDER, CALIFORNIA NETTLE, CATTAILS,COYOTE BRUSH,         00001500
*  16   COTTONWOOD, WEEDS                                                       00001600
*  17     COYOTE CREEK            4021  HIGHWAY 237            600.0    2       00001700
*  18                                1    4    5                                00001800
*  19   COTTONWOOD, BOX ELDERS, WILLOWS, ELDERBERRY, WALNUTS, SYCAMORE,         00001900
*  20   CALIFORNIA BUCKEYE                                                      00002000
*  21     COYOTE CREEK            4021  MONTAGUE               735.0    1       00002100
*  22            1                   1    3    4                                00002200
*  23   WEEDS, CATTAILS, WILLOWS                                                00002300
*  24     COYOTE CREEK            4021  KRUSE DR AT DADO       755.0    1       00002400
*  25            1                   1    3    3                                00002500
*  26   WEEDS, WILLOWS                                                          00002600
*  27     COYOTE CREEK            4021  CHARCOT AVE            779.2    0       00002700
*  28            1                   1    3    3                                00002800
*  29     COYOTE CREEK            4021  CHARCOT AVE            780.0    2       00002900
*  30            1                   1    3    4                                00003000
*  31   WILLOWS, COTTONWOOD, COYOTE BRUSH, CATTAILS, WINTER ANNUAL GRASSES,     00003100
*  32   RUSSIAN THISTLE, POISON HEMLOCK                                         00003200
*  33     COYOTE CREEK            4021  O'TOOLE AVE BRIDGE     793.0    1       00003300
*  34                                1    5    4                                00003400
*  35   COTTONWOOD, WILLOW, ALDER, SMILA GRASS, POX ELDER, WEEDS                00003500
*  36     COYOTE CREEK            4021  HWY 17                 797.0    2       00003600
*  37            1         1         1    4    5         1                      00003700
*  38   COTTONWOOD, WILLOWS, BOXELDER, CATTAIL,SMARTWEED, WILD OATS, COYOTE     00003800
*  39   BRUSH                                                                   00003900
*  40     COYOTE CREEK            4021  OLD OAKLAND RD         830.0    1       00004000
*  41            1         1         1    4    5         1                      00004100
*  42   COTTONWOOD, BOXELDER, WILLOWS, BLACK WALNUT, SMARTWEED, RIPGUT GRASS   00004200
*  43     COYOTE CREEK            4021  U S 101                930.0    2       00004300
*  44            1         1         1    4    5         1                      00004400
*  45   COTTONWOOD, BOXELDER, WILLOWS, BLACK WALNUT, CATTAIL, SMARTWEED,       00004500
*
**************************************************************************************************************************************
```

APPENDIX B

SUPPLEMENTARY TABLES

TABLE 2
STRUCTURE OF A MASTER FILE RECORD

Level	Name	Type	Starting Element	Description
1	OUTREC(75)	75I6	1	MSTRFL data record
2	INFLG1	I6	1	File 1 information flag
2	INFLG2	I6	2	File 2 information flag
2	INFLG3	I6	3	File 3 information flag
2	INFLG4	I6	4	File 4 information flag
2	HECFLG	I6	5	HEC2 information flag
2	STA	R6	6	Creek station
2	LOC(4)	4A6	7	Station location description
2	INF01(12)	12R6	11	File 1 information
3	DAMAGS	R6	11	1% flood damages
3	PRXINS	R6	12	Price of flood insurance
3	PROOF	R6	13	Price of floodproofing
3	PRXTFP	R6	14	Price of total floodplain
3	TOTAL	R6	15	Acres of total floodplain
3	ARDEV	R6	16	Acres of developed floodplain
3	ARUND	R6	17	Acres of undeveloped floodplain
3	ARIND	R6	18	Acres of industrial floodplain
3	DISCRT	R6	19	Discount rate
3	INF01(3)	R6	20	Empty
2	TYPE	I6	23	Channel type code
2	BDATE	I6	24	Channel as-built date
2	INF02(10)	11R6	25	File 2 information
3	INELEV	R6	25	Invert elevation
3	EXIWS	R6	26	Existing 1% water surface
3	BANKMN	R6	27	Minimum bank elevation
3	BOTWID	R6	28	Bottom width
3	SIDSLP	R6	29	Side slope
3	ERSOBS	R6	30	Observed erosion
3	ERSCAL	R6	31	Calculated erosion
3	SEDCAL	R6	32	Calculated sediment depth
3	INF02(3)	3R6	33	Empty

TABLE 2
STRUCTURE OF A MASTER FILE RECORD

Level	Name	Type	Starting Element	Description
2	INF03(11)	11R6	35	File 3 information
3	EXQ1	R6	35	Existing Q 1%
3	EXN	R6	36	Existing n value
3	EXCAP	R6	37	Existing capacity
3	Q1	R6	38	Design Q 1%
3	Q10	R6	39	Design Q 10%
3	DA	R6	40	Drainage area
3	FREQ	R6	41	Frequency of flooding
3	AAD	R6	42	Average annual damages
3	INF03(3)	3R6	43	Empty
2	INF04(4)	4I6	46	File 4 information
3	NVEG	I6	46	Quantity of vegetation
3	NHAB	I6	47	Habitat quality
3	NGWR	I6	48	Groundwater recharge potential
3	NREC	I6	49	Recreation potential/use
2	INF05(19)	19R6	50	HEC-2 information
3	SECNO	R6	50	Section number (FIA station)
3	RBEL	R6	51	Right bank elevation
3	XLBEL	R6	52	Left bank elevation
3	QCAP	R6	53	Channel capacity
3	ELMIN	R6	54	Invert Elevation (FIS)
3	SLOPE	R6	55	Slope
3	Q	R6	56	1% flow
3	CWSEL	R6	57	1% water surface
3	DEPTH	R6	58	1% depth
3	VCH	R6	59	1% velocity
3	AREA	R6	60	1% cross section area
3	TOPWID	R6	61	1% top width
3	K*WTN	R6	62	Weighted n* 1000
3	TIME1	R6	63	Travel Time 1% flow
3	Q	R6	64	10% flow
3	CWSEL	R6	65	10% water surface

TABLE 2
STRUCTURE OF A MASTER FILE RECORD

Level	Name	Type	Starting Element	Description
3	DEPTH	R6	66	10% depth
3	VCH	R6	67	10% velocity
3	AREA	R6	68	10% cross section area
3	TOPWID	R6	69	10% top width
3	K*WTN	R6	70	Weighted n* 1000
3	TIME10	R6	71	Travel Time 10% flow
3	CRKNO	R6	72	Creek number
			73-75	Not used

TABLE 3

CREEK NUMBERS

NORTHWEST ZONE

Creek No.	Creek Name	Creek No.	Creek Name	Creek No.	Creek Name
1010	Adobe Creek	1022	Montebello Creek	1031	Summerhill
1011	Los Trancos	1023	Permanente Div. Channel	1032	Swiss Creek
1012	Barron Creek	1024	Permanente Creek	1034	Deer Creek
1013	Purissima Creek	1025	West Branch Permanete Creek	1036	Seale Channel
1016	Hale Creek	1026	Ohlone Creek	1037	Arastradero
1017	Heney Creek	1028	San Francisquito	1038	Stanford Channel
1018	Loyola Creek	1029	Stevens Creek	1039	Palo Alto Flood Basin
1019	Los Altos Club	1030	Wallace Creek		
1020	Magdalena Creek				
1021	Matadero Creek				

NORTH CENTRAL ZONE

2010	Calabazas Creek	2019	San Tomas Aquino	2028	Vasona Creek
2011	Booker Creek	2021	Saratoga Creek	2030	Wildcat Creek
2013	Junipero Serra Channel	2023	Smith Creek	2033	Daves Creek
2014	Mistletoe Creek	2024	Sobey Creek	2034	Guadalupe Slough
2015	Page Ditch	2026	Sunnyvale East Outfall	2036	Prospect Creek
2017	Regnart Creek	2027	Sunnyvale West Outfall	2038	San Andreas Creek
2018	Rodeo Creek			2039	Sanborn Creek

CENTRAL ZONE

3010	Alamitos Creek	3022	Rincon Creek	3035	McAbee Creek
3011	Canoas Creek	3023	Ross Creek	3036	Aldercroft
3012	Calero Creek	3024	East Ross Creek	3037	Austrian Gulch
3013	Golf Creek	3025	Pheasant Creek	3038	Barrett Canyon
3014	Graystone Creek	3026	Guadalupe Creek	3039	Hendrys Creek
3015	Guadalupe River	3027	Santa Teresa Creek	3040	Herbert Creek
3016	Hooker Creek	3028	South Graystone	3041	Jacques Gulch
3017	Almendra Creek	3029	Randol Creek	3042	Larabee Gulch
3018	Laurel Creek	3030	Chilcote Creek	3043	Limekin Canyon
3019	Lone Hill Creek	3031	Lyndon Creek	3044	Los Capitancillos
3020	Los Gatos Creek	3032	Shannon Creek	3045	Moody Gulch
3021	Briggs Creek	3033	Short Creek	3046	Soda Spring
		3034	Hicks Creek	3047	Trout Creek

EAST ZONE

Creek No.	Creek Name
4010	Los Buellis
4011	Arroyo Aguague
4012	North Babb Ck.
4013	South Babb Ck.
4015	Wrigley-Ford Ck.
4016	Willow Springs
4017	Berryessa Ck.
4018	Calera Creek
4019	Ruby Creek
4020	Coyote Creek Damsites
4021	Coyote Creek
4023	Fisher Creek
4025	Los Coches
4026	Silver Creek- Lower
4029	Miguelita Creek
4030	Sweigert Creek
4031	Piedmont Creek
4032	Penitencia Creek - Upper
4033	Penitencia Creek - Lower
4034	Hawk Creek
4035	Misery Creek
4036	Cribari Creek
4037	Sierra Creek
4038	Silver Creek - Upper
4040	Tularcitos Creek
4041	Crosley Creek
4042	Norwood Creek
4043	Quimby Creek
4044	Fowler Creek
4045	Evergreen Creek
4046	Yerba Buena
4047	Thompson Creek
4048	Flint Creek
4049	Penitencia East Channel
4051	Los Animas Creek
4052	Shingle Creek
4053	San Felipe Creek
4054	Packwood Creek
4055	Scott Creek
4056	Cochran Channel

SOUTH ZONE

Creek No.	Creek Name
5010	Llagas Creek
5011	Jones Creek
5012	West Little Llagas
5013	Madrone Channel
5014	Crews Creek
5015	Miller Slough
5016	Pajaro River
5017	Princevalle Drain
5018	Uvas-Carnadero
5019	Pacheco Creek
5020	Sargent Creek
5021	Corralitos Creek
5022	Maple Creek
5023	Foothill Creek
5024	Tennant Creek
5025	Sycamore Creek
5026	Gavilan Creek
5027	Upper Llagas Creek Watershed Project
5028	Lower Llagas Creek Watershed Project
5029	Alamias Creek
5029	Milias Creek
5031	West Branch Llagas
5032	Center Creek
5033	San Martin Creek
5034	Church Creek
5035	Day Creek
5036	Dexter Creek
5037	East Little Llagas
5038	Edmundson Creek
5039	Lions Creek
5040	Live Oak Creek
5041	New Creek
5042	Panther Creek
5044	Rucker Creek
5045	San Ysidro Creek
5046	South Corralitos
5047	Skillet Creek
5048	Little Arthur
5049	Bodfish Creek
5050	Hayes Creek
5051	Machado Creek
5052	Paradise Creek
5053	Morey Channel
5054	North Morey Ch.
5055	Tar Creek
5056	Tick Creek
5057	Public Law 566 - Upper
5058	Public Law 566 - Lower
5059	Ortega Creek
5060	Burchell Creek
5061	Croy Creek
5062	Little Uvas
5063	Solis Creek
5064	Farman Creek
5065	Tilton Creek
5066	Pescadero
5057	Eastman Canyon Creek
5068	Dewitt Creek
5069	Heron Creek

TABLE 4

LAND USE CLASSIFICATIONS

FUNCTION/CLASSIFICATION		DEFINITION	EXAMPLES
I.	LIVELIHOOD	Five subclasses which delimit five general types of employment in the primary and tertiary sectors of the economy.	
a.	Industrial (LI)	A primary industry where a commodity or product must be produced, it need not be a final product.	IBM, Ford Motors, Hewlett-Packard
b.	Extractive (LE)	A primary industry where a raw material is extracted.	Mining, salt extraction
c.	Commerical (LE)	Where a commercial activity or sales occurs. There is no distinction made between wholesale or retail.	Eastridge, CBD's
d.	Services (LS)	An employment category where a service is provided as the output.	Schools, Churches, Government Offices
e.	Mixed (LM)	A category where there is some question as whether the activity is either commerical, service, industrial, or a mix of the three.	Industrial Parks
II.	RESIDENTIAL	A class describing living areas.	
a.	Detached (RD)	The single family residential region. Due to scale, streets and lawns which do not meet the minimum mapping rules are clustered in this class.	
b.	Clustered (RC)	The multi-family residence. This class does not include the boarding house unless the complier knows it exits.	Condominimums, Apartments

TABLE 4

LAND USE CLASSIFICATIONS

FUNCTION/CLASSIFICATION	DEFINITION	EXAMPLES
III. AGRICULTURE		
a. Annual (AA)	Those fields where a crop is planted on an annual basis. This includes horticulture under artifical conditions.	Truck crops, flowers, hothouses
b. Perennial (AP)	A crop that is harvested from the same stalk year after year.	Vineyards, Orchards.
c. Grazing (AG)	This category is the open range or grass lands.	Open hill sides, fenced pasture.
IV. OPEN	This area is open with no visable activity being conducted.	
a. Improved (IO)	This covers those areas where some form of improvement has taken place. This is usually pervious surfaces.	Play grounds, golf courses, cemetarys, expansive lawns.
b. Unimproved (OU)	As the name implies the area is unimproved.	Vacant lots, proposed freeways, right of ways, orchards in disrepair.
c. Disturbed (OD)	As open unimproved parcel where there is some evidence of change taking place.	Graded or surveyed parcel.
V. TRANSPORTATION		
a. Dynamic (TD)	Those areas set aside for the movement of traffic from one place to another.	Freeways, expressways, railroads.
b. Static (TS)	The area set aside for the parking of transport equipment.	Parking lots, rail yards.

TABLE 4

LAND USE CLASSIFICATIONS

FUNCTION/CLASSIFICATION		DEFINITION	EXAMPLES
VI.	VEGETATION	A cover classification.	
a.	Broadleaf (VL)	Trees which have broadleaves. Usually decidous.	
b.	Needleleaf (VN)	Trees which are needleleaf. Usual evergreens.	
c.	Brush (VB)	Brush lands, not grass.	Chapparel.
VII.	WATER (WR)	A cover classification, standing water.	Ponds, lakes.
VIII.	WETLANDS	A cover classification where the area must marshes. be under the influence of the daily tide or the area is perminately wet.	S. F. Bay Lands, fresh water

TABLE 5

CHANNEL TYPES

Number	Definition
0	Limit of jurisdiction
2	Pipe
3	Arch culvert
4	Box culvert
6	U-Frame concrete
8	Trapezoidal concrete
10	Sacked concrete rip rap
12	Gabion (sides only)
14	Gabion (sides and bottom)
16	Rock lined (sides only)
18	Rock lined (sides and bottom)
20	Earth levees
21	Concrete bottom
22	Flood walls
24	Excavated earth
26	Widened earth (one side)
28	Excavated earth bypass
30	Modified floodplain
32	Natural unmodified

APPENDIX C

WWMM

MAINTENANCE AND UPDATING

WATERWAYS MANAGEMENT MODEL MAINTENANCE

Inherent in the design of the WWMM is the ability to incorporate changes into the planning process with minimal effort. This section describes the periodic maintenance and updating which is necessary to insure that the model reflects the existing watershed conditions and the current political climate.

Information stored in the WWMM's data banks can be kept current through scheduled periodic maintenance, a post project maintenance procedure and modifications made in the course of normal planning activities. The periodic maintenance should be performed on a five-year schedule. One zone can be inventoried per year and the data files updated accordingly. Specific procedures which have been established for periodic and post project maintenance are listed in this chapter.

Discussion of relevant data and procedures for maintenance has been segregated into corresponding application programs.

1. Flooding and Flood Damages (IP01S1 and IP01K2)

Since land uses change rapidly in the Santa Clara Valley, the IP01S1 primary data file will perhaps require the most extensive updating. Data which must be periodically updated in this file include, land uses, building density, flooded area and depth of flooding. This would only occur if flood limits change or a new land use map is prepared. If the District completes a project the floodplain will be eliminated. If FEMA revises the flood maps the floodplain could expand or be reduced. Data files will be updated as changes occur.

After any change in the primary data file, the program should be executed and the subsequent data written to the master file. Land values are kept current through the use of a real estate index. Since the real estate index is input by the user when the program is run, it is the users responsibility to keep it current. The current value of the real estate index is the median single family home sales price for the San Jose area published by the San Jose Real Estate Board.

2. Sedimentation and Erosion (IP02S1 AND IP02K2)

Most data in this program's primary data file is not expected to change appreciably. Channel type, geometry, and as-built date revisions should be minimal and easily achieved. Observed erosion, though, can be constantly updated throughout the year if field observations are reported. The logical group to report erosion is maintenance but all observations should be recorded. The IP02K1 data will also be updated at project completion and through periodical program maintenance. After any changes in the primary data file the program should be run with IMASTR=1 and then written to the master file.

3. Average Annual Damages (IP03S1 and IP03K2)

The primary data changes in this program will also be minimal. Flow rates (existing 1% and existing capacity) and channel roughnesses will require updating in the primary data file, but these will basically only change with the completion of District projects and through periodical program maintenance.

After any changes in it's primary data file this program should be run with IMASTR=1 and then written into the master file. What is important to understand about this program is that it computes average annual damages from data calculated from the Flood Damages program. Therefore, even if no changes are made in this primary data file the program should be executed if the damages data is updated so that the average annual damage values in the master file reflect the flood damages.

4. Maintenance (IP04S1)

The data required by this program is located in the master file. Therefore, output from this program will be current as long as the data in the master file is kept current.

5. Elements and Funding (IP05S1)

This program also has no primary data file so other than data incorporated in the program its only data sources are the master file and the user. The data incorporated in the program which may require updating includes criteria for choosing elements and funding, and values for cost estimation. Major critéria changes should be addressed as soon as possible if District policies or schedules may be affected. Minor criteria changes may be filed until periodical maintenance is scheduled. The optional user input data is the cost for the element. If the user calculates the cost then this data is assured of being up to date (this is recommended for accuracy).

6. Priority (IP06S1)

The priority program requires the current Engineering News Record Construction Cost Index (published quarterly), the cost of channel maintenance and a total project cost to be input by the user.

The length of inadequate channel downstream will change with project completion and should be updated at that time.

Additional data required by the priority programs is located in the master file and will be current if the routine maitnenance is performed.

7. Master File Control (IP07S1)

The Master File Control Program accesses all intermediate files for input to the master file. If JOBTYP=2, data from all the intermediate files are written into the master file. This JOBTYP is used if entire creeks or creek stations have been added. If JOBTYP=5, only the data from the intermediate file specified is updated in the master file. This JOBTYP is useful if no creek or no creek stations have been added. To make temporary changes for sensitivity analysis or test scenarios the data will be written to the alternate master file (this procedure can be accessed by any user). For permanent changes the data will be written to the primary master file. Because of the obvious need to retain accuracy and consistency, changes to the primary master file will not be allowed without sanction of the Predesign Division.

Knowledge of the interrelationship between programs is required to accurately update the master file. The master file reads five intermediate files, in which three are independent of master file data and two are dependent on the master file data. The independent programs (for the IMASTR=1 execution) are Damages (IP01S1), Environmental (IP09S1), and HEC II (IP08S1). The former two are input to the master file using JOBTYP=2 or 5 and the latter one requires JOBTYP=6 to be input. These three can be run at anytime without being influenced by another program. Each of the two dependent programs must be executed in sequence to obtain a complete rewrite or update. Since the Average Annual Damages (IP03S1) program requires both HEC II data and Flood Damages data, it should be executed following any changes in either data base and, since Sedimentation and Erosion (IP02S1) uses Average Annual Damages data and HEC-II data, it should be executed following changes in these. Therefore, complete rewrites or updates aren't always necessary.

8. HEC-II (IP08S1 and IP08KA-E)

Annual maintenance for the HEC II data files will include modifications to include new bridges and culverts, major changes in channel geometry and topographic data obtained from surveys.

Post project maintenance for the HEC II data files will include complete revision to reflect new design. When program data is modified the program should be executed with OUTFLG = 1 or 2 to create an intermediate file. The data in the intermediate file should then be written into the master file on running IP07S1 with JOBTYP=6.

9. Environmental (IP09S1 and IP09K2)

Changes in the environmental quality or quantity or in multipurpose uses will not occur in very many locations. Therefore, this data will be relatively easy to update. After any change of the primary data, the program should be run with IMASTR=1 and the data then subsequently input into the master file.

The procedures previously outlined will constitute a complete maintenance program for the WWMM. It is estimated that 200 hours annually will be required to maintain the WWMM. The tasks involved in the annual maintenance may be distributed among the Predesign staff, District personnel with seasonal slack time, rotatees and others. As long as the systematic procedures are performed, they will insure the WWMM remains an effective planning tool and source of current information for flood control facilities.

WWMM MAINTENANCE BY APPLICATION PROGRAM

Application Program	Modification Procedure	Data
DAMAGES: (IP02S1 & IP01K2)	Run with IMASTER = 1	Land uses, building densities, property values, flooded area, depth of flooding, real estate index.
SEDIMENTATION & EROSION: (IP02S1 & IP02K2)	Run with IMASTER = 1	Channel type, geometry, as-builts dates, observed erosion.
AVERAGE ANNUAL DAMAGE: (IP03S1 & IP03K2)	Run with IMASTER = 1	Flow rates, channel roughness coefficient and capacity.
MAINTENANCE (IP04S1)		
ELEMENT AND FUNDING (IP05S1)	Internal program changes	Funding criteria, cost estimates
PRIORITY (IP06S1 & IP06K1)	User input changes	ENR Construction Cost Index, maintenance costs, length of inadequate channels
MASTER FILE (IP07S1)	To completely rewrite the master file, the sequence is: 1. IP01S1; IMASTER=1 2. IP07S1; Job=2 or 5 3. IP03S1; IMASTR=1 4. IP07S1; Job=2 or 5 5. IP02S1: IMASTR=1 or 6. IP09S1; IMASTR=1 7. IP07S1: JOB=2 or 5 For change in damages only the first 4 steps are needed. For a flow rate change, steps 2-7 will be required. If a complete rewrite isn't needed, the update options may be used.	
HEC II (IP08S1, IP08KA-E)	Set OUTLEV = 1 or 2 Run 1P07S1 Job = 6	Channel roughness coefficient, bridges, cross-section changes.
ENVIRONMENTAL (IP09S1 & IP09K2)	Run with IMASTER = 1	Environmental and Multipurpose changes.

POST PROJECT MODEL MAINTENANCE

I. Flood Damages

- A. Obtain or prepare HECII decks to model post project conditions
  1. Determine revised floodplain limits
  2. Determine water surface elevations and depths of flooding
  3. Transfer HECII output data into the master file

- B. Revise areas subject to flooding to reflect post project conditions
  1. Revise 1" - 500' scale floodplain land use maps
  2. Revise floodplain overlays

- C. Revise Flood Damage Primary Data File (IP01K2)
  1. Determine areas subject to flooding by land use
  2. Determine respective depths of flooding
  3. Make necessary modifications to IP01K2

II. Channel characteristics

- A. Erosion and Sediment Program Primary Data File (IP02K2) Revisions
  1. Channel type
  2. Bottom width
  3. Right side slope
  4. Left side slope
  5. Top width
  6. Invert elevation
  7. Existing 1% water surface elevation
  8. Minimum bank elevation
  9. As built date
  10. Observed erosion classification

- B. Average Annual Damages and Frequency Primary Data File (IP03K2) Revisions
  1. Existing 1% flowrate
  2. Existing manning's number
  3. Existing capacity

- C. Environmental Quality Primary Data File Revisions
  1. Habitat type
  2. Quantity of vegetation
  3. Habitat quality

III. Miscellaneous

- A. Run the Priority Program for the zone in which the project was completed
  1. Set the variable DSCALC equal to one to update the length of inadequate channel downstream in the data file IP06K2
  2. Revise the project cost for the completed project
  3. Revise the annual maintenance cost for the revised project

- B. Completely rewrite the master file

PERIODIC PROGRAM MAINTENANCE

I. Land Use Revision

- A. Identify changes in floodplain land use using:
  1. Aerial photographs
  2. Assessors role
  3. Field observations

- B. Modify land use designated on 1" = 500' scale floodplain land use maps
  Land in the floodplain converted from open space or agricultural use to commercial, industrial or residential use after 1979 should not be subject to flooding

- C. Modify floodplain areas
  1. Make appropriate alterations to floodplain limits to depict changes caused by new development
  2. Make appropriate alterations to floodplain limits to reflect culvert enlargement, remedial projects, etc.

II. Channel Characteristics

- A. Channel Modifications
  1. Modify HECII programs to reflect channel modifications made by developers, private parties, or other agencies
  2. Modify sediment and erosion program primary data file (IP02K2) to reflect channel modifications made by developers, private parties, or other agencies

- B. Observed Erosion
  Review and modify the observed erosion classifications in (IP02K2) as necessary

III. Hydrology

- A. Review and modify the 1% and 10% flood flow rates as necessary to reflect upstream channel improvements
- B. Review design hydrologies for revisions

IV. Project and Maintenance Costs

- A. Review project costs for continued relevance
- B. Remove any segments of total project costs which have been completed through cost sharing with local agencies, developer construction, emergency measures, etc.
- C. Update channel maintenance costs to reflect recent cost figures

V. Funding

Update funding criteria in the elements and funding program to reflect any changes which have occurred.

GUIDELINES FOR ADDING A HEC-2 RUN TO THE WWMM HEC-2 LIBRARY

1. Find two (2) new available files/check PRO library.

   (?PD IP==== on ENGDAT)

2. From the HEC-2 directory locate the appropriate HEC-2 library file and the record number where the new run is to be inserted.

   (To obtain a HEC-2 directory see WWMM users guide)

HEC-2 LIBRARY FILES

FILE #	ZONE	DISKPACK FILE NAME
1	Northwest	ENGDAT/IP08KA
2	North Central	ENGDAT/IP08KB
3	Central	ENGDAT/IP08KC
4	East	ENGDAT/IP08KD
19	South	ENGDAT/IP08KE

3. Copy the HEC-2 library file (e.g. ENGDAT/IP08KD) to a new file (e.g. "A").

   (@ copy ENGDAT/IP08KD to ENGDAT/IPAAAA)

4. Copy the HEC-2 library file to a new second file (e.g. "B").

   (@ copy ENGDAT/IP08KD to ENGDAT/IPBBBB)

5. In File "A", delete all runs which will proceed the new run in the library file. Use the update mode in DEO to delete records.

   (@ delete 1 for 7039)

6. In File "B", delete all runs which will succeed the new run in the library file.
(@ delete 7040 thru 14314)

7. Append the new run (file) to File "B". PRO
(@ append ENGDAT/IPHEC2 to ENGDAT/IPBBBB)

8. Append File "A" to File "B". PRO
(@ append ENGDAT/IPAAAA to ENGDAT/IPBBBB)

9. Remove File "A" completely. PRO
(@ Remove ENGDAT/IPAAAA)

10. Add an "ST" card to the new run. Use an appropriate DEO display format.
(@ insert 7039 for 1)

Col 1 - 2	"ST"
Col 6 - 9	Creek Number
Col 10 - 11	Run Number
Col 26 - 41	Creek Name
Col 42 - 59	HEC -2 Run Location
Col 60 - 66	HEC -2 Run Downstream Station Limit
Col 68 - 74	HEC -2 Run Upstream Station Limit

11. Review File "B" to make sure new run was entered correctly.

12. Remove the library file. PRO

    (@ Remove ENGDAT/IP08KD)

13. Copy File "B" to replace the old library file.

    (@ Copy ENGDAT/IPBBBB to ENGDAT/IP08KD)

14. Run IP08 with the directory update option.

    (See WWMM users guide)

15. One last review!